```
=> d his

     (FILE 'HOME' ENTERED AT 14:39:49 ON 12 SEP 2001)
               SET COST OFF

     FILE 'REGISTRY' ENTERED AT 14:40:06 ON 12 SEP 2001
L1             2 S (VITAMIN D3 OR PREVITAMIN D3)/CN
L2           106 S C27H44O/MF AND C6/ES AND C5-C6/ES
L3            67 S L2 NOT (LABELED OR ION OR (D OR T)/ELS OR 11C# OR 13C# OR 14C
L4            41 S L3 NOT 3 OL
L5            26 S L3 NOT L4
L6            24 S L5 NOT 46.150.18/RID
L7             5 S L6 NOT (19 OR 6 8)
L8            19 S L6 NOT L7
L9            15 S L8 NOT (13 OR 5 8)
L10           12 S L9 NOT 14

     FILE 'HCAPLUS' ENTERED AT 14:46:42 ON 12 SEP 2001
L11         4425 S L10
L12        10946 S (VITAMIN OR PREVITAMIN OR PRE VITAMIN)(L)D3
L13         8231 S (VITAMIN OR PREVITAMIN OR PRE VITAMIN)()D3
L14         9071 S L11,L13
L15         2573 S L12 NOT L14
               E JOHANNSEN M/AU
L16           13 S E3,E8
L17            2 S L14 AND L16
L18            0 S L15 AND L16

     FILE 'REGISTRY' ENTERED AT 14:55:02 ON 12 SEP 2001
L19            4 S (TACHYSTEROL OR DIHYDROCHOLESTEROL OR LUMISTEROL OR CHOLESTER
L20            1 S CARBON DIOXIDE/CN

     FILE 'HCAPLUS' ENTERED AT 14:55:37 ON 12 SEP 2001
L21           28 S L14 AND (L20 OR CARBON DIOXIDE OR CO2)
L22          645 S L14 AND (L19 OR TACHYSTEROL OR DIHYDROCHOLESTEROL OR LUMISTER
L23            5 S L21 AND L22
               E CHOROMATOG/CW
               E CHROMATOG/CW
L24          160 S E3-E7 AND L14
               E CHROMATOGRAPH/CT
               E E65+ALL
L25          194 S L14 AND E4,E3+NT
               E E254+ALL
L26            8 S L14 AND E4,E3+NT
L27           11 S L14 AND E34+NT
L28          937 S L14 AND ?CHROMATOG?
L29            7 S L24-L28 AND L21
L30          100 S L14 AND SILICA(L)GEL
L31            1 S L30 AND L21
L32            7 S L17,L29,L31
L33            3 S L23 AND L32
L34          584 S L14 AND ?CHOLESTEROL?
L35          602 S L14 AND ?CHOLESTER?
L36            6 S L22,L34,L35 AND L21
L37          157 S L22,L34,L35 AND L24-L28
L38           19 S L37 AND L30
L39            1 S L38 AND L36
L40           10 S L23,L29,L31,L32,L33,L36,L39
L41            1 S L38 AND L40
L42           10 S L40,L41
L43         1169 S L19 (L) (PUR/RL OR PREP/RL)
L44            1 S L43 AND L21
L45           25 S L43 AND L22,L34,L35
L46            3 S L43 AND L24-L28
L47            2 S L43 AND L30
L48           15 S L42,L44,L46,L47
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L49           6 S L45 AND L48
L50          15 S L48,L49
L51          12 S L50 AND (PD<=19990617 OR PRD<=19990617 OR AD<=19990617 OR PY<
L52          11 S L51 AND (?VITAMIN?(L)D3 OR ?CALCIFER?)
                SEL HIT RN

     FILE 'REGISTRY' ENTERED AT 15:46:29 ON 12 SEP 2001
L53           6 S E1-E6

=> fil reg

FILE 'REGISTRY' ENTERED AT 15:46:51 ON 12 SEP 2001
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STRUCTURE FILE UPDATES:   11 SEP 2001  HIGHEST RN 356031-45-3
DICTIONARY FILE UPDATES:  11 SEP 2001  HIGHEST RN 356031-45-3

TSCA INFORMATION NOW CURRENT THROUGH January 11, 2001

  Please note that search-term pricing does apply when
  conducting SmartSELECT searches.

Structure search limits have been increased.  See HELP SLIMIT
for details.

=> d ide can tot l53

L53  ANSWER 1 OF 6  REGISTRY  COPYRIGHT 2001 ACS
RN   1173-13-3  REGISTRY
CN   9,10-Secocholesta-5(10),6,8-trien-3-ol, (3.beta.,6Z)- (9CI)  (CA INDEX
     NAME)
OTHER CA INDEX NAMES:
CN   9,10-Secocholesta-5(10),6,8-trien-3.beta.-ol (8CI)
CN   Precalciferol (6CI)
CN   Previtamin D3 (7CI)
OTHER NAMES:
CN   Precalciferol3
CN   Precholecalciferol
CN   Previtamin D
FS   STEREOSEARCH
MF   C27 H44 O
LC   STN Files:   AGRICOLA, BEILSTEIN*, BIOBUSINESS, BIOSIS, CA, CAOLD, CAPLUS,
       CASREACT, CHEMINFORMRX, CHEMLIST, DDFU, DRUGU, EMBASE, IFICDB, IFIPAT,
       IFIUDB, MEDLINE, PROMT, TOXLINE, TOXLIT, USPATFULL
         (*File contains numerically searchable property data)
     Other Sources:   EINECS**
         (**Enter CHEMLIST File for up-to-date regulatory information)

Absolute stereochemistry.
Double bond geometry as shown.
```
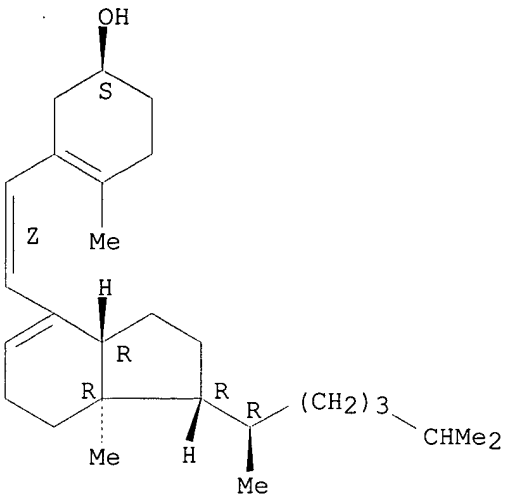



188 REFERENCES IN FILE CA (1967 TO DATE)
8 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
188 REFERENCES IN FILE CAPLUS (1967 TO DATE)
12 REFERENCES IN FILE CAOLD (PRIOR TO 1967)

REFERENCE 1: 135:107502

REFERENCE 2: 133:360476

REFERENCE 3: 133:334430

REFERENCE 4: 133:259147

REFERENCE 5: 133:56445

REFERENCE 6: 132:331390

REFERENCE 7: 132:331360

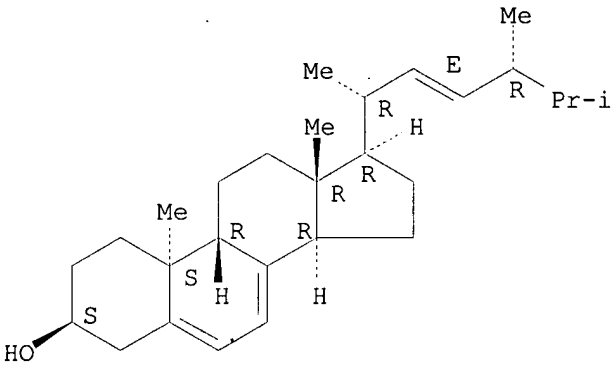
REFERENCE 8: 132:319279

REFERENCE 9: 132:233616

REFERENCE 10: 132:90073

L53 ANSWER 2 OF 6 REGISTRY COPYRIGHT 2001 ACS
RN **474-69-1** REGISTRY
CN Ergosta-5,7,22-trien-3-ol, (3.beta.,9.beta.,10.alpha.,22E)- (9CI) (CA INDEX NAME)
OTHER CA INDEX NAMES:
CN 9.beta.,10.alpha.-Ergosta-5,7,22-trien-3-ol (7CI)
CN 9.beta.,10.alpha.-Ergosta-5,7,22-trien-3.beta.-ol (8CI)
CN Lumisterol (6CI)
OTHER NAMES:
CN 9.beta.,10.alpha.-Ergosterol
CN Lumisterol2
FS STEREOSEARCH
MF C28 H44 O
CI COM
LC STN Files: AGRICOLA, BEILSTEIN*, BIOBUSINESS, BIOSIS, CA, CAOLD, CAPLUS, CASREACT, CEN, CHEMINFORMRX, CHEMLIST, HODOC*, MRCK*, PROMT, TOXLIT, USPATFULL
(*File contains numerically searchable property data)
Other Sources: EINECS**
(**Enter CHEMLIST File for up-to-date regulatory information)

Absolute stereochemistry.
Double bond geometry as shown.



67 REFERENCES IN FILE CA (1967 TO DATE)
67 REFERENCES IN FILE CAPLUS (1967 TO DATE)
29 REFERENCES IN FILE CAOLD (PRIOR TO 1967)

REFERENCE 1: 133:360476

REFERENCE 2: 133:207169

REFERENCE 3: 133:164184

REFERENCE 4: 133:56445

REFERENCE 5: 132:64451

REFERENCE 6: 132:16978

REFERENCE 7: 129:203136

REFERENCE 8: 127:128594

REFERENCE 9: 125:234097

REFERENCE 10: 125:99776

L53 ANSWER 3 OF 6 REGISTRY COPYRIGHT 2001 ACS
RN **124-38-9** REGISTRY
CN Carbon dioxide (8CI, 9CI) (CA INDEX NAME)
OTHER NAMES:
CN Carbon oxide (CO2)
CN Carbon-12 dioxide
CN Carbon-12C dioxide-16O2
CN Carbonic acid anhydride
CN Carbonic acid gas
CN Carbonic anhydride
CN Dry ice
CN Khladon 744
CN R 744
FS 3D CONCORD
DR 18923-20-1
MF C O2
CI COM
LC STN Files: ADISNEWS, AGRICOLA, AIDSLINE, ANABSTR, APILIT, APILIT2, APIPAT, APIPAT2, BIOBUSINESS, BIOSIS, BIOTECHNO, CA, CABA, CANCERLIT, CAOLD, CAPLUS, CASREACT, CBNB, CEN, CHEMCATS, CHEMINFORMRX, CHEMLIST, CHEMSAFE, CIN, CSCHEM, CSNB, DDFU, DETHERM*, DIOGENES, DIPPR*, DRUGU,

EMBASE, GMELIN*, HODOC*, HSDB*, IFICDB, IFIPAT, IFIUDB, IPA, MEDLINE, MRCK*, MSDS-OHS, NIOSHTIC, PDLCOM*, PIRA, PROMT, RTECS*, SPECINFO, TOXLINE, TOXLIT, TRCTHERMO*, TULSA, ULIDAT, USAN, USPATFULL, VETU, VTB
(*File contains numerically searchable property data)
Other Sources: DSL**, EINECS**, TSCA**
(**Enter CHEMLIST File for up-to-date regulatory information)

127172 REFERENCES IN FILE CA (1967 TO DATE)
548 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
127344 REFERENCES IN FILE CAPLUS (1967 TO DATE)
21 REFERENCES IN FILE CAOLD (PRIOR TO 1967)

REFERENCE 1: 135:174408

REFERENCE 2: 135:174364

REFERENCE 3: 135:174319

REFERENCE 4: 135:174318

REFERENCE 5: 135:173686

REFERENCE 6: 135:172921

REFERENCE 7: 135:172672

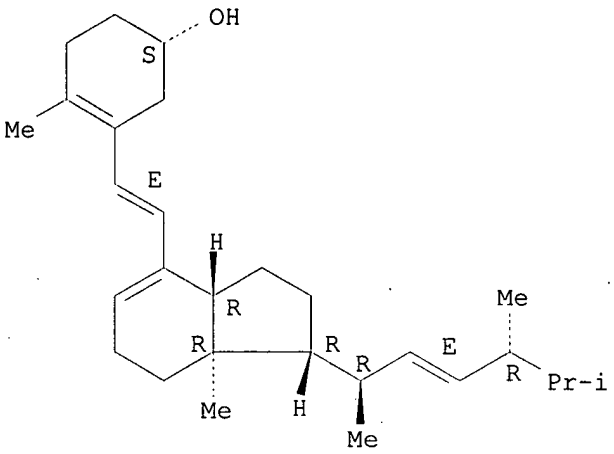
REFERENCE 8: 135:172528

REFERENCE 9: 135:171387

REFERENCE 10: 135:171367

L53 ANSWER 4 OF 6 REGISTRY COPYRIGHT 2001 ACS
RN **115-61-7** REGISTRY
CN 9,10-Secoergosta-5(10),6,8,22-tetraen-3-ol, (3.beta.,6E,22E)- (9CI) (CA INDEX NAME)
OTHER CA INDEX NAMES:
CN Tachysterol (6CI, 7CI, 8CI)
OTHER NAMES:
CN Provitamin D
CN Tachysterin2
CN Tachysterol2
FS STEREOSEARCH
MF C28 H44 O
LC STN Files: AGRICOLA, BEILSTEIN*, BIOBUSINESS, BIOSIS, CA, CABA, CAOLD, CAPLUS, CASREACT, CHEMLIST, DDFU, DRUGU, EMBASE, HODOC*, MRCK*, PROMT, TOXLIT, USPATFULL
(*File contains numerically searchable property data)
Other Sources: EINECS**
(**Enter CHEMLIST File for up-to-date regulatory information)

Absolute stereochemistry.
Double bond geometry as shown.



86 REFERENCES IN FILE CA (1967 TO DATE)
1 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
86 REFERENCES IN FILE CAPLUS (1967 TO DATE)
24 REFERENCES IN FILE CAOLD (PRIOR TO 1967)

REFERENCE 1: 135:107502

REFERENCE 2: 133:360476

REFERENCE 3: 133:164184

REFERENCE 4: 133:56445

REFERENCE 5: 132:98212

REFERENCE 6: 132:64451

REFERENCE 7: 131:272075

REFERENCE 8: 131:257757

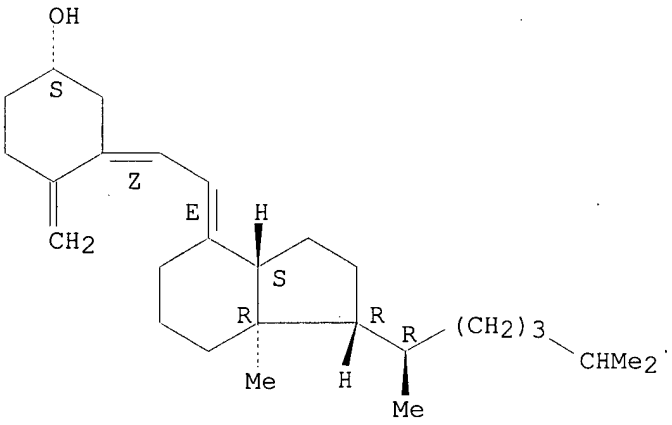
REFERENCE 9: 129:203136

REFERENCE 10: 127:128594

L53 ANSWER 5 OF 6 REGISTRY COPYRIGHT 2001 ACS
RN **67-97-0** REGISTRY
CN 9,10-Secocholesta-5,7,10(19)-trien-3-ol, (3.beta.,5Z,7E)- (9CI) (CA INDEX NAME)
OTHER CA INDEX NAMES:
CN Cholecalciferol (8CI)
OTHER NAMES:
CN 9,10-Secocholesta-5,7,10(19)-trien-3.beta.-ol
CN Arachitol
CN Calciol
CN Colecalciferol
CN D3-Vigantol
CN Delsterol
CN Deparal
CN FeraCol
CN Granuvit D3
CN Oleovitamin D3
CN Quintox
CN Ricketon
CN Trivitan
CN Vi-De3
CN Videkhol

CN Vigorsan
CN Vitamin D3
CN Vitinc Dan-Dee-3
FS STEREOSEARCH
DR 8024-19-9, 8050-67-7
MF C27 H44 O
CI COM
LC STN Files: ADISNEWS, AGRICOLA, AIDSLINE, ANABSTR, BEILSTEIN*, BIOBUSINESS, BIOSIS, BIOTECHNO, CA, CABA, CANCERLIT, CAOLD, CAPLUS, CASREACT, CBNB, CEN, CHEMCATS, CHEMINFORMRX, CHEMLIST, CIN, CSCHEM, CSNB, DDFU, DETHERM*, DIOGENES, DRUGU, EMBASE, HODOC*, HSDB*, IFICDB, IFIPAT, IFIUDB, IMSDIRECTORY, IPA, MEDLINE, MRCK*, MSDS-OHS, NAPRALERT, NIOSHTIC, PROMT, RTECS*, SPECINFO, SYNTHLINE, TOXLINE, TOXLIT, USAN, USPATFULL, VETU
(*File contains numerically searchable property data)
Other Sources: DSL**, EINECS**, TSCA**, WHO
(**Enter CHEMLIST File for up-to-date regulatory information)

Absolute stereochemistry.
Double bond geometry as shown.



4284 REFERENCES IN FILE CA (1967 TO DATE)
436 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
4287 REFERENCES IN FILE CAPLUS (1967 TO DATE)
5 REFERENCES IN FILE CAOLD (PRIOR TO 1967)

REFERENCE 1: 135:170854

REFERENCE 2: 135:166960

REFERENCE 3: 135:162482

REFERENCE 4: 135:142226

REFERENCE 5: 135:136698

REFERENCE 6: 135:133161

REFERENCE 7: 135:124156

REFERENCE 8: 135:117253

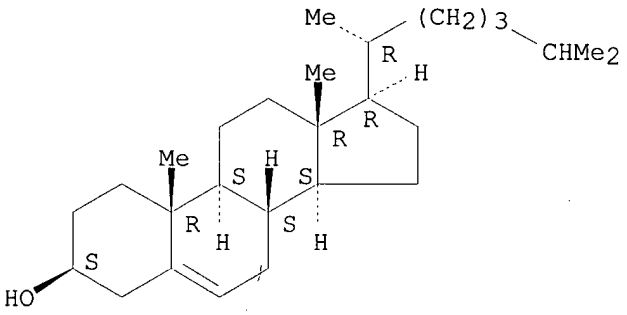
REFERENCE 9: 135:111987

REFERENCE 10: 135:107502

L53 ANSWER 6 OF 6 REGISTRY COPYRIGHT 2001 ACS
RN **57-88-5** REGISTRY
CN Cholest-5-en-3-ol (3.beta.)- (9CI) (CA INDEX NAME)

OTHER CA INDEX NAMES:
CN Cholesterol (8CI)
OTHER NAMES:
CN (-)-Cholesterol
CN .DELTA.5-Cholesten-3.beta.-ol
CN 3.beta.-Hydroxycholest-5-ene
CN 5:6-Cholesten-3.beta.-ol
CN Cholest-5-en-3.beta.-ol
CN Cholesterin
CN Cholesteryl alcohol
CN Dythol
CN Lidinit
CN Lidinite
CN Provitamin D
FS STEREOSEARCH
DR 209124-38-9, 218965-24-3
MF C27 H46 O
CI COM
LC STN Files: ADISNEWS, AGRICOLA, AIDSLINE, ANABSTR, BEILSTEIN*, BIOBUSINESS, BIOSIS, BIOTECHNO, CA, CABA, CANCERLIT, CAOLD, CAPLUS, CASREACT, CBNB, CEN, CHEMCATS, CHEMINFORMRX, CHEMLIST, CIN, CSCHEM, CSNB, DDFU, DETHERM*, DIOGENES, DIPPR*, DRUGU, EMBASE, GMELIN*, HODOC*, IFICDB, IFIPAT, IFIUDB, IPA, MEDLINE, MRCK*, MSDS-OHS, NAPRALERT, NIOSHTIC, PDLCOM*, PIRA, PROMT, RTECS*, SPECINFO, TOXLINE, TOXLIT, TULSA, ULIDAT, USAN, USPATFULL, VETU, VTB
(*File contains numerically searchable property data)
Other Sources: DSL**, EINECS**, TSCA**
(**Enter CHEMLIST File for up-to-date regulatory information)

Absolute stereochemistry.



73763 REFERENCES IN FILE CA (1967 TO DATE)
7924 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
73865 REFERENCES IN FILE CAPLUS (1967 TO DATE)
15 REFERENCES IN FILE CAOLD (PRIOR TO 1967)

REFERENCE 1: 135:172387

REFERENCE 2: 135:170765

REFERENCE 3: 135:170605

REFERENCE 4: 135:166962

REFERENCE 5: 135:166386

REFERENCE 6: 135:166378

REFERENCE 7: 135:166376

REFERENCE 8: 135:166374

REFERENCE 9: 135:166372

REFERENCE 10: 135:166365

=> fil hcaplus

FILE 'HCAPLUS' ENTERED AT 15:47:04 ON 12 SEP 2001
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FILE COVERS 1947 - 12 Sep 2001 VOL 135 ISS 12
FILE LAST UPDATED: 11 Sep 2001 (20010911/ED)

This file contains CAS Registry Numbers for easy and accurate substance identification.

This file supports REG1stRY for direct browsing and searching of all substance data from the REGISTRY file. Enter HELP FIRST for more information.

HCAplus now provides online access to patents and literature covered in CA from 1947 to the present. On April 22, 2001, bibliographic information and abstracts were added for over 2.2 million references published in CA from 1947 to 1966.

=> d all hitstr tot l52

L52 ANSWER 1 OF 11 HCAPLUS COPYRIGHT 2001 ACS
AN 2000:12675 HCAPLUS
DN 132:64451
TI Process for the preparation of **vitamin D3** and **provitamin D3**
IN **Johannsen, Monika**
PA F. Hoffmann-La Roche A.-G., Switz.
SO Eur. Pat. Appl., 7 pp.
CODEN: EPXXDW
DT Patent
LA German
IC ICM C07C401-00
CC 32-7 (Steroids)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 969001	A2	20000105	EP 1999-111617	19990616 <--
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	US 2001001801	A1	20010524	US 1999-335022	19990617 <--
	CN 1240209	A	20000105	CN 1999-108675	19990622 <--
	JP 2000053640	A2	20000222	JP 1999-175755	19990622 <--
	BR 9903274	A	20000516	BR 1999-3274	19990622 <--
PRAI	EP 1998-111490	A	19980623 <--		

AB A process for obtaining **vitamin D3** or **previtamin D3** from a mixt. of other steroids, such as **dehydrocholesterol, lumisterol** and **tachysterol**, is characterized by sepg. **vitamin D3** or **previtamin D3** by means of column **chromatog.** with supercrit. or liq. **carbon dioxide** as the mobile phase. Thus, **vitamin D3** was sepd. from a steroid

mixt. consisting of **vitamin D3, previtamin D3, dehydrocholesterol, lumisterol** and **tachysterol**, using a Hewlett-Packard **chromatograph** (HP G105A SFC) with supercrit. **CO2** (>>31.degree. and >>7.3 MPa) as the mobile phase. Schematics for the sepn. procedure and a diagram of the **chromatog.** app. are presented.

ST column **chromatog** sepn **vitamin D3 previtamin D3**

IT **Liquid chromatography**
Purification
Separation
Supercritical fluid chromatography
(prepn. of **vitamin D3** and **provitamin D3** via sepn. from a mixt. via column **chromatog.** with supercrit. or liq. **carbon dioxide**)

IT **Silica gel**, uses
RL: NUU (Nonbiological use, unclassified); USES (Uses)
(prepn. of **vitamin D3** and **provitamin D3** via sepn. from a mixt. via column **chromatog.** with supercrit. or liq. **carbon dioxide**)

IT Steroids, preparation
RL: PUR (Purification or recovery); REM (Removal or disposal); PREP (Preparation); PROC (Process)
(prepn. of **vitamin D3** and **provitamin D3** via sepn. from a mixt. via column **chromatog.** with supercrit. or liq. **carbon dioxide**)

IT **124-38-9, Carbon dioxide**, uses
RL: NUU (Nonbiological use, unclassified); USES (Uses)
(prepn. of **vitamin D3** and **provitamin D3** via sepn. from a mixt. via column **chromatog.** with supercrit. or liq. **carbon dioxide**)

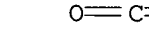
IT **67-97-0P, Vitamin D3 1173-13-3P, Previtamin D3**
RL: PUR (Purification or recovery); PREP (Preparation)
(prepn. of **vitamin D3** and **provitamin D3** via sepn. from a mixt. via column **chromatog.** with supercrit. or liq. **carbon dioxide**)

IT **115-61-7, Tachysterol** 434-16-2, **Dehydrocholesterol 474-69-1, Lumisterol**
RL: REM (Removal or disposal); PROC (Process)
(prepn. of **vitamin D3** and **provitamin D3** via sepn. from a mixt. via column **chromatog.** with supercrit. or liq. **carbon dioxide**)

RE.CNT 1
RE
(1) Anon; EP 0969001 A2 HCAPLUS

IT **124-38-9, Carbon dioxide**, uses
RL: NUU (Nonbiological use, unclassified); USES (Uses)
(prepn. of **vitamin D3** and **provitamin D3** via sepn. from a mixt. via column **chromatog.** with supercrit. or liq. **carbon dioxide**)

RN 124-38-9 HCAPLUS
CN Carbon dioxide (8CI, 9CI) (CA INDEX NAME)

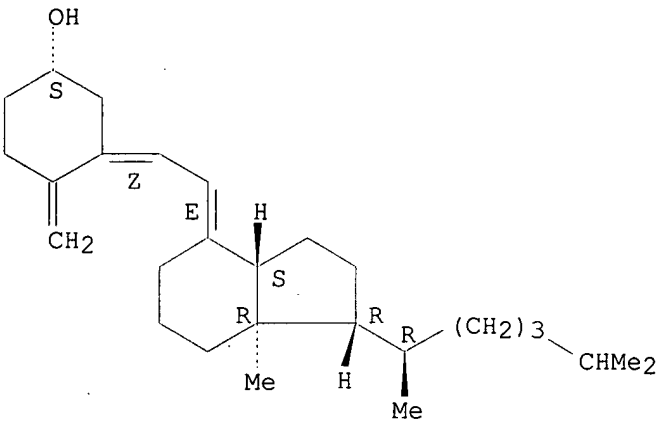


IT **67-97-0P, Vitamin D3 1173-13-3P, Previtamin D3**
RL: PUR (Purification or recovery); PREP (Preparation)
(prepn. of **vitamin D3** and **provitamin D3** via sepn. from a mixt. via column **chromatog.** with supercrit. or liq. **carbon dioxide**)

RN 67-97-0 HCAPLUS
CN 9,10-Secocholesta-5,7,10(19)-trien-3-ol, (3.beta.,5Z,7E)- (9CI) (CA INDEX

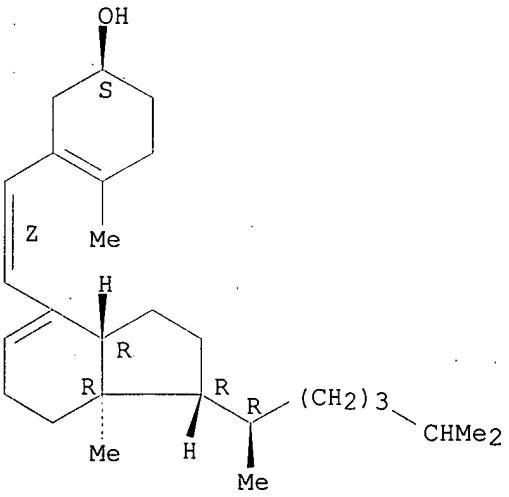
NAME)

Absolute stereochemistry.
Double bond geometry as shown.



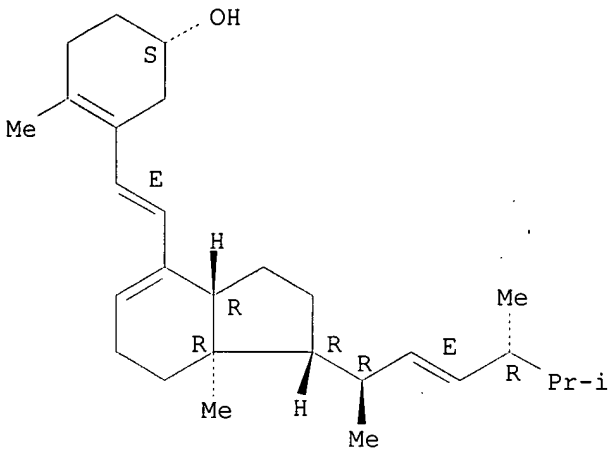
RN 1173-13-3 HCAPLUS
CN 9,10-Secocholesta-5(10),6,8-trien-3-ol, (3.beta.,6Z)- (9CI) (CA INDEX NAME)

Absolute stereochemistry.
Double bond geometry as shown.



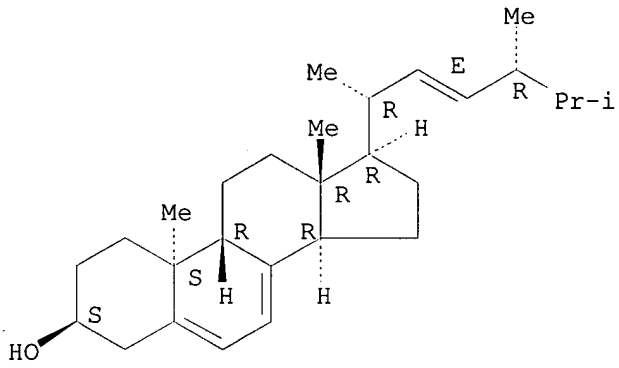
IT **115-61-7, Tachysterol 474-69-1, Lumisterol**
RL: REM (Removal or disposal); PROC (Process)
(prepn. of **vitamin D3** and **provitamin D3** via sepn. from a mixt. via column **chromatog.** with supercrit. or liq. **carbon dioxide**)
RN 115-61-7 HCAPLUS
CN 9,10-Secoergosta-5(10),6,8,22-tetraen-3-ol, (3.beta.,6E,22E)- (9CI) (CA INDEX NAME)

Absolute stereochemistry.
Double bond geometry as shown.



RN 474-69-1 HCAPLUS
CN Ergosta-5,7,22-trien-3-ol, (3.beta.,9.beta.,10.alpha.,22E)- (9CI) (CA INDEX NAME)

Absolute stereochemistry.
Double bond geometry as shown.



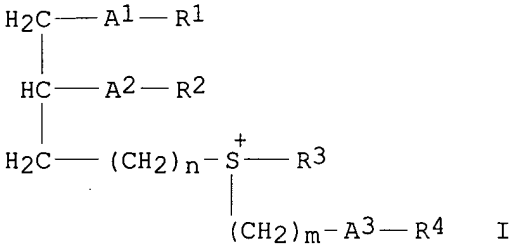
L52 ANSWER 2 OF 11 HCAPLUS COPYRIGHT 2001 ACS
AN 1997:144994 HCAPLUS
DN 126:144504
TI Preparation of thiocationic lipids used for the intracellular delivery of biomolecules for therapeutic or diagnostic purposes
IN Sridhar, C. Nagaraja; Dattagupta, Nanibhushan; Patel, Jasmin R.; Das, Aditya Ranjan
PA Gen-Probe Incorporated, USA
SO Eur. Pat. Appl., 24 pp.
CODEN: EPXXDW
DT Patent
LA English
IC ICM C07C381-12
ICS A61K009-127; A61K047-48; C12N015-88; C07H021-00
CC 33-9 (Carbohydrates)
Section cross-reference(s): 1, 34, 63
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 747351	A2	19961211	EP 1996-304227	19960606 <--
	EP 747351	A3	19970226		
	R: AT, BE, CH, DE, DK, ES, FR, GB, IT, LI, LU, NL, SE				
	US 5711964	A	19980127	US 1995-480622	19950607 <--
	US 5739271	A	19980414	US 1995-482497	19950607 <--

	US 5756352	A	19980526	US 1995-480204	19950607 <--
	US 5759519	A	19980602	US 1995-482430	19950607 <--
	US 5851548	A	19981222	US 1995-482305	19950607 <--
	WO 9640627	A2	19961219	WO 1996-US7121	19960517 <--
	WO 9640627	A3	19970213		
	W: AU, CA, JP, KR				
	CA 2222586	AA	19961219	CA 1996-2222586	19960517 <--
	AU 9658622	A1	19961230	AU 1996-58622	19960517 <--
	JP 11507031	T2	19990622	JP 1996-500592	19960517 <--
PRAI	US 1995-480203		19950607 <--		
	US 1995-480204		19950607 <--		
	US 1995-480622		19950607 <--		
	US 1995-482305		19950607 <--		
	US 1995-482430		19950607 <--		
	US 1995-482497		19950607 <--		
	WO 1996-US7121		19960517 <--		

OS MARPAT 126:144504

GI



I

AB The prepn. of lipid mols. bearing a cationic charge I (A1, A2 = OCO, O, SCO, S; A3 = O, OCO, **CO2**, S, SCO, OCS, CONH, NHCO, CSNH, NHCS, NHCO2, NHCONH, OCONH; R1, R2 = H, satd. or partially unsatd. alkyl, aralkyl; R3 = alkyl; R4 = aminoalkyl, imino; m, n = 0-8), is described. These cationic lipids are useful in the delivery of biomols., such as oligonucleotides, nucleic acids, peptides, diagnostic imaging agents, proteins and drug mols. In the form of liposomes, they can effectively be used for the intracellular delivery of biomols. for therapeutic or diagnostic purposes.

ST virucide cationic lipid prepn oligodeoxyribonucleotide; liposome drug delivery cationic lipid prepn; peptide drug delivery cationic lipid prepn; nucleic acid drug delivery cationic lipid; oligodeoxyribonucleotide drug delivery cationic lipid prepn; cationic lipid prepn biomol delivery

IT Liposomes
RL: BPR (Biological process); BIOL (Biological study); PROC (Process)
(biomols.; prepn. of thiocationic lipids used for the intracellular delivery of biomols. for therapeutic or diagnostic purposes)

IT Lipids, preparation
RL: BAC (Biological activity or effector, except adverse); IMF (Industrial manufacture); SPN (Synthetic preparation); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)
(cationic; prepn. of thiocationic lipids used for the intracellular delivery of biomols. for therapeutic or diagnostic purposes)

IT Antiviral agents
(thiocationic lipids; prepn. of thiocationic lipids used for the intracellular delivery of biomols. for therapeutic or diagnostic purposes)

IT Oligodeoxyribonucleotides
RL: BAC (Biological activity or effector, except adverse); IMF (Industrial manufacture); SPN (Synthetic preparation); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)
(thiocationic lipids; prepn. of thiocationic lipids used for the intracellular delivery of biomols. for therapeutic or diagnostic purposes)

IT 163834-19-3P 163834-20-6P
RL: BAC (Biological activity or effector, except adverse); IMF (Industrial manufacture); RCT (Reactant); SPN (Synthetic preparation); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)
(prepn. of thiocationic lipids used for the intracellular delivery of biomols. for therapeutic or diagnostic purposes)

IT **57-88-5DP, Cholesterol**, mixt. contg., with DODMEHAP, oleic acid, and oligonucleotidephosphorothioate **67-97-0DP, Vitamin D3**, mixt. contg., with DODMEHAP, oleic acid, and oligonucleotidephosphorothioate 112-80-1DP, Oleic acid, mixt. contg., with DODMEHAP, **cholesterol**, and oligonucleotidephosphorothioate 186491-30-5P, DOMCATOP 186491-31-6P, DODMECAP 186491-32-7DP, DODMEHAP, mixt. contg., with oleic acid, oligonucleotidephosphorothioate, and **cholesterol** or **vitamin D3** 186491-33-8P, DOMHYTOP
RL: BAC (Biological activity or effector, except adverse); IMF (Industrial manufacture); SPN (Synthetic preparation); THU (Therapeutic use); BIOL (Biological study); **PREP (Preparation)**; USES (Uses)
(prepn. of thiocationic lipids used for the intracellular delivery of biomols. for therapeutic or diagnostic purposes)

IT 74123-26-5P 186491-19-0P 186491-20-3P 186491-21-4P 186491-22-5P 186491-23-6P 186491-24-7P 186491-25-8P 186491-26-9P 186491-27-0P 186491-28-1P
RL: IMF (Industrial manufacture); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation)
(prepn. of thiocationic lipids used for the intracellular delivery of biomols. for therapeutic or diagnostic purposes)

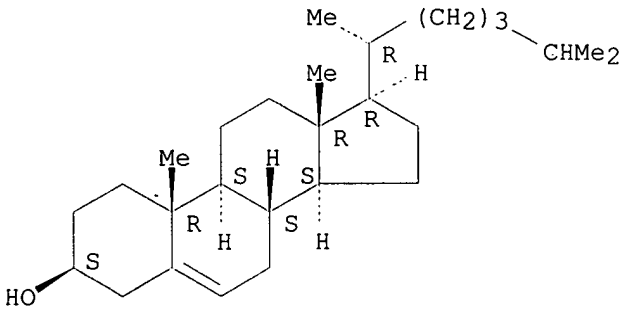
IT 4224-70-8, 6-Bromohexanoic acid 4286-55-9 5188-07-8, Sodium thiomethoxide 13071-60-8 86008-21-1 186491-29-2
RL: RCT (Reactant)
(prepn. of thiocationic lipids used for the intracellular delivery of biomols. for therapeutic or diagnostic purposes)

IT 186491-18-9P 186675-81-0DP, 5'-aminoalkyl deriv.
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation)
(prepn. of thiocationic lipids used for the intracellular delivery of biomols. for therapeutic or diagnostic purposes)

IT **57-88-5DP, Cholesterol**, mixt. contg., with DODMEHAP, oleic acid, and oligonucleotidephosphorothioate **67-97-0DP, Vitamin D3**, mixt. contg., with DODMEHAP, oleic acid, and oligonucleotidephosphorothioate
RL: BAC (Biological activity or effector, except adverse); IMF (Industrial manufacture); SPN (Synthetic preparation); THU (Therapeutic use); BIOL (Biological study); **PREP (Preparation)**; USES (Uses)
(prepn. of thiocationic lipids used for the intracellular delivery of biomols. for therapeutic or diagnostic purposes)

RN 57-88-5 HCAPLUS
CN Cholest-5-en-3-ol (3.beta.)- (9CI) (CA INDEX NAME)

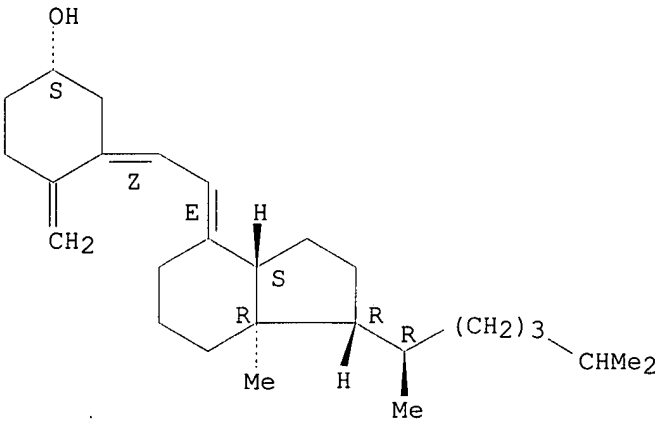
Absolute stereochemistry.



RN 67-97-0 HCAPLUS
CN 9,10-Secocholesta-5,7,10(19)-trien-3-ol, (3.beta.,5Z,7E)- (9CI) (CA INDEX

NAME)

Absolute stereochemistry.
Double bond geometry as shown.



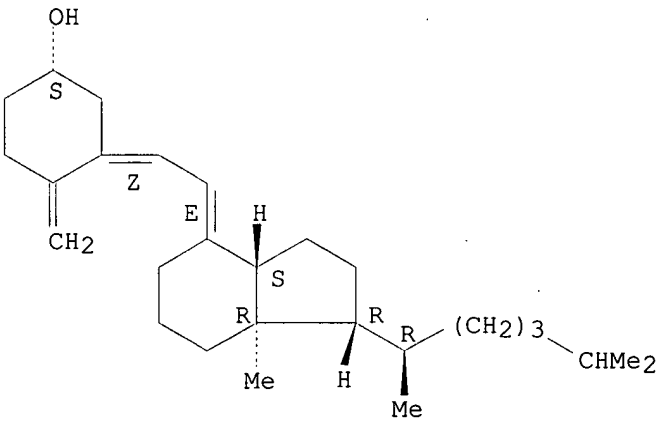
L52 ANSWER 3 OF 11 HCAPLUS COPYRIGHT 2001 ACS
AN 1997:44341 HCAPLUS
DN 126:51588
TI Solubilities of the Fat-Soluble Vitamins A, D, E, and K in Supercritical **Carbon Dioxide**
AU **Johannsen, Monika**; Brunner, Gerd
CS Arbeitsbereich Verfahrenstechnik II, Technical University, Hamburg, D-21073, Germany
SO J. Chem. Eng. Data (**1997**), 42(1), 106-111
CODEN: JCEAAX; ISSN: 0021-9568
PB American Chemical Society
DT Journal
LA English
CC 68-1 (Phase Equilibriums, Chemical Equilibriums, and Solutions)
Section cross-reference(s): 17, 26
AB Solubilities of eight different species of the fat-sol. vitamins A, D, E, and K in supercrit. **carbon dioxide** were measured at (313, 333, and 353) K and over a pressure range of 20 MPa to 35 MPa. Solubilities have been detd. by an anal. method using the direct coupling of an equil. cell to a supercrit. fluid **chromatog**. system with UV detection. The solubilities of all fat-sol. vitamins in supercrit. **carbon dioxide** under the conditions investigated are in the range of 10 g/kg, except for .beta.-carotene (provitamin A), which is 3 orders of magnitude less sol. With increasing mol. mass of the vitamin, its soly. in supercrit. **carbon dioxide** decreases. At const. temp., the soly. of all substances increases with increasing d. At const. d., a rise of temp. results in an increase in soly. This is caused by the increasing vapor pressure of the solid.
ST soly fat soluble vitamin supercrit solvent; vitamin soly supercrit **carbon dioxide**
IT Vitamins
RL: PRP (Properties)
(fat-sol.; solubilities of fat-sol. vitamins A, D, E, and K in supercrit. **carbon dioxide**)
IT Solubility
(solubilities of fat-sol. vitamins A, D, E, and K in supercrit. **carbon dioxide**)
IT 50-14-6, Vitamin D2 58-27-5, Vitamin K3 **67-97-0**, **Vitamin D3** 68-26-8, trans-Retinol 119-13-1, .delta.-Tocopherol **124-38-9**, **Carbon dioxide**, properties 7235-40-7, .beta.,.beta.-Carotene 10191-41-0, DL-.alpha.-Tocopherol 11104-38-4, Vitamin K1
RL: PRP (Properties)

(solubilities of fat-sol. **vitamins** A, D, E, and K in supercrit. **carbon dioxide**)

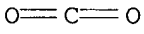
IT **67-97-0, Vitamin D3 124-38-9, Carbon dioxide**, properties
RL: PRP (Properties)
(solubilities of fat-sol. **vitamins** A, D, E, and K in supercrit. **carbon dioxide**)

RN 67-97-0 HCAPLUS
CN 9,10-Secocholesta-5,7,10(19)-trien-3-ol, (3.beta.,5Z,7E)- (9CI) (CA INDEX NAME)

Absolute stereochemistry.
Double bond geometry as shown.



RN 124-38-9 HCAPLUS
CN Carbon dioxide (8CI, 9CI) (CA INDEX NAME)



L52 ANSWER 4 OF 11 HCAPLUS COPYRIGHT 2001 ACS
AN 1996:500657 HCAPLUS
DN 125:230937
TI Packed capillary column supercritical fluid **chromatography** of fat-soluble vitamins using liquid crystal polysiloxane coated particles
AU Shen, Y.; Bradshaw, J. S.; Lee, M. L.
CS Dep. Chem., Brigham Young Univ., Provo, UT, 84602, USA
SO Chromatographia (**1996**), 43(1/2), 53-58
CODEN: CHRGB7; ISSN: 0009-5893
DT Journal
LA English
CC 64-3 (Pharmaceutical Analysis)
AB Liq. crystal polysiloxane stationary phases were prepd. by coating two different polymers on deactivated porous silica particles (10 .mu.m diam., 80 .ANG. pores). Deactivation of the silica particles before coating was necessary to prep. highly efficient and inert stationary phases for supercrit. fluid **chromatog**. (SFC). Fat-sol. **vitamins** E, A, K1, K2, D2, and **D3** were sepd. on these columns using neat supercrit. **CO2** as mobile phase. The analyses were completed within 40 min at 70.degree.. The results were compared to those obtained using a capillary column packed with less ordered liq. crystal m,m-cyanobiphenyl-substituted polysiloxane coated particles. Reduced shape selectivity was obsd. with this cyanobiphenyl phase. The response factors of **vitamins** A, E, K1, K2, D2, and **D3** when using the flame ionization detector (FID) were detd. to be very similar.
ST supercrit fluid **chromatog** fat vitamin
IT **Chromatography, supercritical fluid**

(packed capillary column; packed capillary column supercrit. fluid **chromatog**. of fat-sol. vitamins using liq. crystal polysiloxane coated particles)

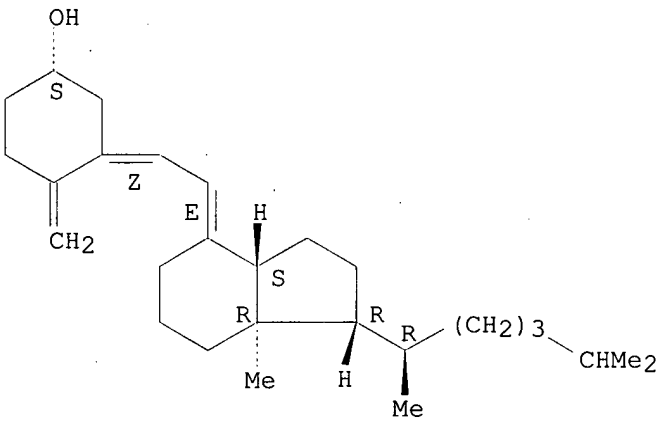
IT Vitamins
RL: ANT (Analyte); ANST (Analytical study)
(fat-sol., packed capillary column supercrit. fluid **chromatog**. of fat-sol. vitamins using liq. crystal polysiloxane coated particles)

IT 50-14-6, Vitamin d2 **67-97-0, Vitamin d3**
1406-18-4, Vitamin e 11032-49-8, Vitamin k2 11103-57-4, Vitamin a
11104-38-4, Vitamin k1
RL: ANT (Analyte); ANST (Analytical study)
(packed capillary column supercrit. fluid **chromatog**. of fat-sol. **vitamins** using liq. crystal polysiloxane coated particles)

IT **67-97-0, Vitamin d3**
RL: ANT (Analyte); ANST (Analytical study)
(packed capillary column supercrit. fluid **chromatog**. of fat-sol. **vitamins** using liq. crystal polysiloxane coated particles)

RN 67-97-0 HCAPLUS
CN 9,10-Secocholesta-5,7,10(19)-trien-3-ol, (3.beta.,5Z,7E)- (9CI) (CA INDEX NAME)

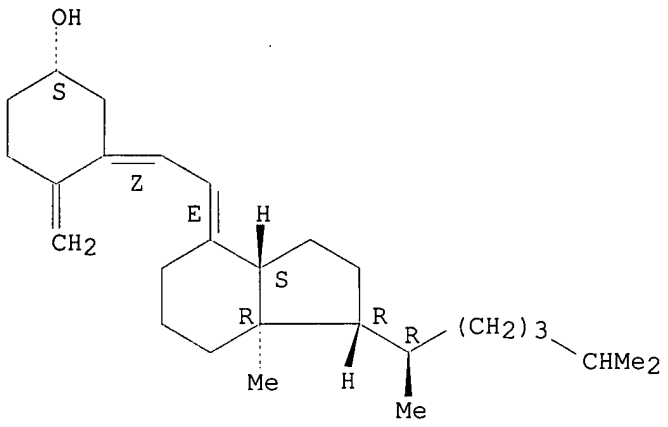
Absolute stereochemistry.
Double bond geometry as shown.



L52 ANSWER 5 OF 11 HCAPLUS COPYRIGHT 2001 ACS
AN 1995:956938 HCAPLUS
DN 124:105153
TI Applications of reversed-phase high performance liquid **chromatography** using enhanced-fluidity liquid mobile phases
AU Lee, Stephen T.; Olesik, Susan V.; Fields, Steven M.
CS Department of Chemistry, The Ohio State University, Columbus, OH, 43210, USA
SO J. Microcolumn Sep. (**1995**), 7(5), 477-83
CODEN: JMSEEJ; ISSN: 1040-7685
DT Journal
LA English
CC 80-4 (Organic Analytical Chemistry)
Section cross-reference(s): 51, 64
AB Enhanced-fluidity liq. mobile phases (methanol/H2O/**CO2**) were used as eluents in reversed-phase HPLC. The low pressure drop across the column allowed serial connection of micro-scale columns to achieve the efficient sepn. of a coal tar sample. Other applications such as the sepn. of fat sol. vitamins and probucol and related compds. are shown.
ST vitamin sepn reversed phase HPLC; reversed phase HPLC enhanced fluidity; coal tar reversed phase HPLC; drug analysis reversed phase HPLC; liq

chromatog enhanced fluidity mobile phase
IT Pharmaceutical analysis
(coal tar and vitamins and drugs sepn. by reversed-phase high performance liq. **chromatog**. using enhanced-fluidity liq. mobile phases)
IT Tar
RL: ANT (Analyte); ANST (Analytical study)
(coal, coal tar and vitamins and drugs sepn. by reversed-phase high performance liq. **chromatog**. using enhanced-fluidity liq. mobile phases)
IT Vitamins
RL: ANT (Analyte); ANST (Analytical study)
(fat-sol., coal tar and vitamins and drugs sepn. by reversed-phase high performance liq. **chromatog**. using enhanced-fluidity liq. mobile phases)
IT **Chromatography, column and liquid**
(**high-performance** reversed-phase, coal tar and vitamins and drugs sepn. by reversed-phase **high performance** liq. **chromatog**. using enhanced-fluidity liq. mobile phases)
IT Aromatic hydrocarbons, analysis
RL: ANT (Analyte); ANST (Analytical study)
(polycyclic, coal tar and vitamins and drugs sepn. by reversed-phase high performance liq. **chromatog**. using enhanced-fluidity liq. mobile phases)
IT 50-14-6, **Ergocalciferol** 50-32-8, (Benzo[a]pyrene), analysis 53-70-3, Dibenz[a,h]anthracene 56-55-3, Benzo[a]anthracene **67-97-0, Cholecalciferol** 68-26-8, trans-Retinol 71-43-2, Benzene, analysis 85-01-8, Phenanthrene, analysis 86-73-7, Fluorene 91-20-3, Naphthalene, analysis 116-31-4, trans-Retinal 120-12-7, Anthracene, analysis 127-47-9, Retinol acetate 128-37-0, BHT, analysis 128-38-1 129-00-0, Pyrene, analysis 191-24-2, Benzo[ghi]perylene 193-39-5, (Indeno[1,2,3-cd]pyrene) 205-99-2, Benzo[b]fluoranthene 206-44-0, Fluoranthene 207-08-9, (Benzo[k]fluoranthene) 208-96-8, Acenaphthylene 218-01-9, Chrysene 2455-14-3 10191-41-0 11104-38-4, Vitamin K1 23288-49-5, Probucol 26067-78-7 51571-18-7 52225-20-4 129895-82-5
RL: ANT (Analyte); ANST (Analytical study)
(coal tar and vitamins and drugs sepn. by reversed-phase high performance liq. **chromatog**. using enhanced-fluidity liq. mobile phases)
IT **67-97-0, Cholecalciferol**
RL: ANT (Analyte); ANST (Analytical study)
(coal tar and vitamins and drugs sepn. by reversed-phase high performance liq. **chromatog**. using enhanced-fluidity liq. mobile phases)
RN 67-97-0 HCAPLUS
CN 9,10-Secocholesta-5,7,10(19)-trien-3-ol, (3.beta.,5Z,7E)- (9CI) (CA INDEX NAME)

Absolute stereochemistry.
Double bond geometry as shown.



L52 ANSWER 6 OF 11 HCAPLUS COPYRIGHT 2001 ACS
AN 1995:319449 HCAPLUS
DN 122:104187
TI Quantitative analysis of marine oils by capillary supercritical fluid **chromatography**
AU Staby, A.; Borch-Jensen, C.; Balchen, S.; Mollerup, J.
CS Dep. Chem. Eng., Technical Univ. Denmark, Lyngby, 2800, Den.
SO Chromatographia (**1994**), 39(11/12), 697-705
CODEN: CHRGB7; ISSN: 0009-5893
DT Journal
LA English
CC 17-1 (Food and Feed Chemistry)
AB Supercrit. fluid **chromatog.** anal. methods have been employed in the examn. of several marine oils for the group sepn. of free fatty acids, retinol, **ergocalciferol**, **cholecalciferol**, squalene, tocopherols, **cholesterol**, wax esters, diacylglycerols, **cholesteryl** esters, and triacylglycerols. The oils were derived from characteristic species including shark, seal, edible and trash fish. The supercrit. fluid **chromatog.** (SFC) method used for the sepn. of the liqs. utilize **carbon dioxide** as the mobile phase, a non-polar capillary column, and flame ionization detection. The SFC methods have proved capable of making a considerable contribution to the continuing investigations into the structure and compn. of marine oils. Furthermore SFC analyses, with their very simple sample prepn. requirements, may serve as alternatives or supplements to the existing range of **chromatog.** and non-**chromatog.** anal. methods used in the examn. of these oils.
ST fish oil capillary supercrit fluid **chromatog**; marine oil capillary supercrit fluid **chromatog**
IT Fats and Glyceridic oils
RL: AMX (Analytical matrix); ANST (Analytical study)
(basking shark; detn. of marine oil constituents by capillary supercrit. fluid **chromatog.**)
IT Cod-liver oil
RL: AMX (Analytical matrix); ANST (Analytical study)
(detn. of marine oil constituents by capillary supercrit. fluid **chromatog.**)
IT Fatty acids, analysis
RL: ANT (Analyte); ANST (Analytical study)
(detn. of marine oil constituents by capillary supercrit. fluid **chromatog.**)
IT Glycerides, analysis
RL: ANT (Analyte); ANST (Analytical study)
(detn. of marine oil constituents by capillary supercrit. fluid **chromatog.**)
IT Tocopherols
RL: ANT (Analyte); ANST (Analytical study)

(detn. of marine oil constituents by capillary supercrit. fluid **chromatog.**)

IT Waxes and Waxy substances
RL: ANT (Analyte); ANST (Analytical study)
(detn. of marine oil constituents by capillary supercrit. fluid **chromatog.**)

IT **Chromatography, supercritical fluid**
(capillary, detn. of marine oil constituents by capillary supercrit. fluid **chromatog.**)

IT Glycerides, analysis
RL: ANT (Analyte); ANST (Analytical study)
(di-, detn. of marine oil constituents by capillary supercrit. fluid **chromatog.**)

IT Vitamins
RL: ANT (Analyte); ANST (Analytical study)
(fat-sol., detn. of marine oil constituents by capillary supercrit. fluid **chromatog.**)

IT Fats and Glyceridic oils
RL: AMX (Analytical matrix); ANST (Analytical study)
(fish, detn. of marine oil constituents by capillary supercrit. fluid **chromatog.**)

IT Fats and Glyceridic oils
RL: AMX (Analytical matrix); ANST (Analytical study)
(herring, detn. of marine oil constituents by capillary supercrit. fluid **chromatog.**)

IT Fats and Glyceridic oils
RL: AMX (Analytical matrix); ANST (Analytical study)
(mackerel, detn. of marine oil constituents by capillary supercrit. fluid **chromatog.**)

IT Fats and Glyceridic oils
RL: AMX (Analytical matrix); ANST (Analytical study)
(sand eel, detn. of marine oil constituents by capillary supercrit. fluid **chromatog.**)

IT Fats and Glyceridic oils
RL: AMX (Analytical matrix); ANST (Analytical study)
(seal, detn. of marine oil constituents by capillary supercrit. fluid **chromatog.**)

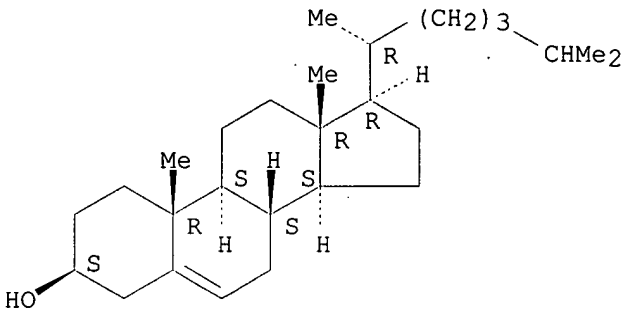
IT Fats and Glyceridic oils
RL: AMX (Analytical matrix); ANST (Analytical study)
(tuna, detn. of marine oil constituents by capillary supercrit. fluid **chromatog.**)

IT 50-14-6, **Ergocalciferol** **57-88-5, Cholesterol**
, analysis **57-88-5D, Cholesterol**, esters
67-97-0, Cholecalciferol 68-26-8, Retinol 111-02-4,
Squalene 119-13-1, .delta.-Tocopherol
RL: ANT (Analyte); ANST (Analytical study)
(detn. of marine oil constituents by capillary supercrit. fluid **chromatog.**)

IT **57-88-5, Cholesterol**, analysis **57-88-5D,**
Cholesterol, esters **67-97-0, Cholecalciferol**
RL: ANT (Analyte); ANST (Analytical study)
(detn. of marine oil constituents by capillary supercrit. fluid **chromatog.**)

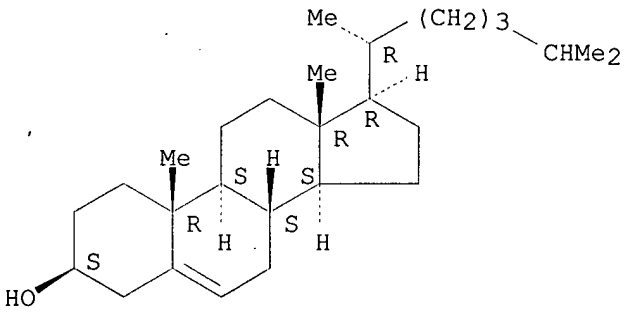
RN 57-88-5 HCAPLUS
CN Cholest-5-en-3-ol (3.beta.)- (9CI) (CA INDEX NAME)

Absolute stereochemistry.



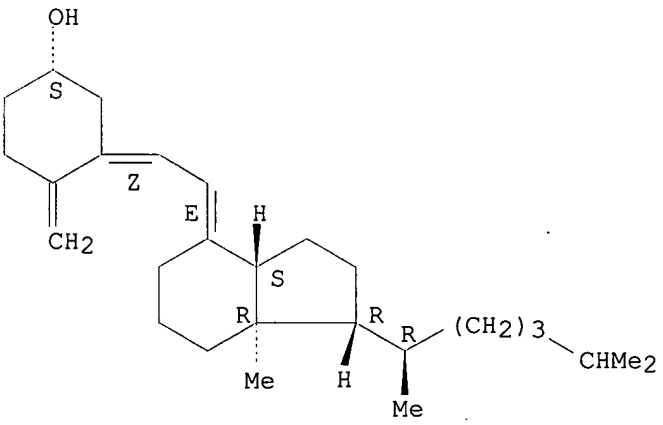
RN 57-88-5 HCAPLUS
CN Cholest-5-en-3-ol (3.beta.)- (9CI) (CA INDEX NAME)

Absolute stereochemistry.



RN 67-97-0 HCAPLUS
CN 9,10-Secocholesta-5,7,10(19)-trien-3-ol, (3.beta.,5Z,7E)- (9CI) (CA INDEX NAME)

Absolute stereochemistry.
Double bond geometry as shown.



L52 ANSWER 7 OF 11 HCAPLUS COPYRIGHT 2001 ACS
AN 1985:418487 HCAPLUS
DN 103:18487
TI Photoconversion of 7-**dehydrocholesterol** to **vitamin D3** in synthetic phospholipid bilayers
AU Yamamoto, J. K.; Borch, R. F.
CS Dep. Chem., Univ. Minnesota, Minneapolis, MN, 55455, USA
SO Biochemistry (**1985**), 24(13), 3338-44
CODEN: BICHAW; ISSN: 0006-2960

DT Journal
LA English
CC 6-1 (General Biochemistry)
AB The incorporation of 7-**dehydrocholesterol** (I) into synthetic phospholipid bilayers altered the distribution of products after photolysis. In liposomes, the relative amts. of I and **lumisterol** were elevated, and **tachysterol** was reduced from the levels obsd. in hexane soln. Z To E isomerization of the **previtamin** to **tachysterol** is favored in org. solvents. The inhibition of this process is evidence that an ordered lipid matrix places a new constraint on the conformation of the ring B fission product, one in which the configuration is favorable for a return to a cyclized diene. Further, rate enhancements of .ltoreq.15-fold were obsd. for the thermal isomerization of the **previtamin** to **vitamin D3** in liposomes. The free energies of activation for the reaction at 25.degree. were reduced by 1.3-1.5 kcal/mol in the bilayer environment compared to that of hexane. As this reaction involves the concerted transfer of a H atom via a cyclic intermediate, it provides addnl. evidence for membrane stabilization of an all-cis conformation of the **previtamin**. Photoproduct ratios were also studied for I adsorbed to a variety of solid supports. That nonspecific interactions of I with lipid can influence product formation may have important implications with respect to the mechanism of **vitamin D3** biosynthesis.
ST **dehydrocholesterol** photolysis product phospholipid bilayer; **vitamin D3** formation **dehydrocholesterol** phospholipid bilayer; isomerization **previtamin D3** phospholipid bilayer
IT Glass, oxide
Silica gel, uses and miscellaneous
RL: BIOL (Biological study)
(**dehydrocholesterol** adsorbed to, photolysis of, products of)
IT Phosphatidylcholines, uses and miscellaneous
RL: USES (Uses)
(liposomes, **dehydrocholesterol** photolysis in, products of)
IT Kinetics of photolysis
(of **dehydrocholesterol**, in phospholipid liposomes)
IT Photolysis
(of **dehydrocholesterol**, in phospholipid liposomes and adsorbed to matrices)
IT Kinetics of isomerization
(cis-trans, photochem., of **previtamin D3**, in phospholipid liposomes)
IT Liposome
(large unilamellar, phospholipid, **dehydrocholesterol** photolysis in, products of)
IT Liposome
(multilamellar, phospholipid, **dehydrocholesterol** photolysis in, products of)
IT 9002-88-4 9003-53-6 83589-62-2
RL: BIOL (Biological study)
(**dehydrocholesterol** adsorbed to, photolysis of, products of)
IT 110-54-3, uses and miscellaneous
RL: USES (Uses)
(**dehydrocholesterol** photolysis products in presence of, products in phospholipid liposomes in relation to)
IT **1173-13-3P**
RL: PREP (Preparation)
(formation and photoisomerization of, in photolysis of **dehydrocholesterol** in phospholipid liposomes)
IT **67-97-0P 115-61-7P 474-69-1P**
RL: MFM (Metabolic formation); BIOL (Biological study); FORM (Formation, nonpreparative); **PREP (Preparation)**
(formation of, in **dehydrocholesterol** photolysis in phospholipid liposomes)
IT 2644-64-6 4539-70-2
RL: BIOL (Biological study)

(liposomes, **dehydrocholesterol** photolysis in, products of)

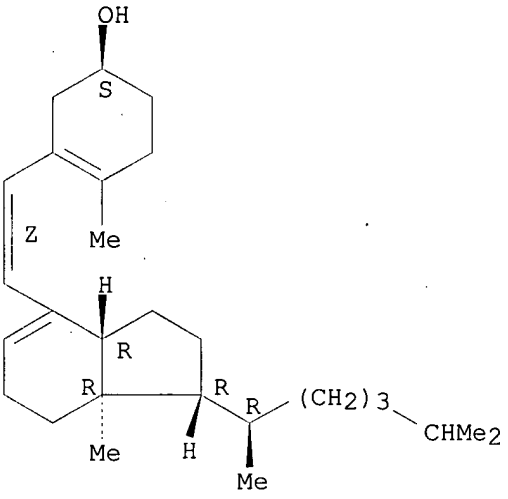
IT **57-88-5**, reactions
RL: RCT (Reactant)
(phosphatidylcholine liposomes contg., **dehydrocholesterol** photolysis in, products of)

IT 434-16-2
RL: RCT (Reactant)
(photolysis of, in phospholipid liposomes and matrix-adsorbed, **vitamin D3** and other metabolites formation in)

IT **1173-13-3P**
RL: PREP (Preparation)
(formation and photoisomerization of, in photolysis of **dehydrocholesterol** in phospholipid liposomes)

RN 1173-13-3 HCAPLUS
CN 9,10-Secocholesta-5(10),6,8-trien-3-ol, (3.beta.,6Z)- (9CI) (CA INDEX NAME)

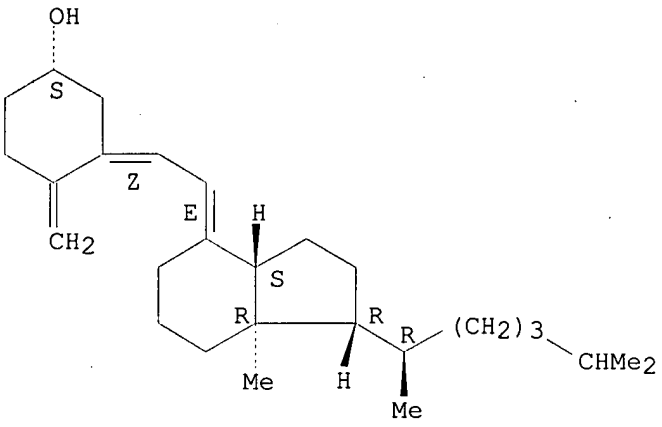
Absolute stereochemistry.
Double bond geometry as shown.



IT **67-97-0P 115-61-7P 474-69-1P**
RL: MFM (Metabolic formation); BIOL (Biological study); FORM (Formation, nonpreparative); **PREP (Preparation)**
(formation of, in **dehydrocholesterol** photolysis in phospholipid liposomes)

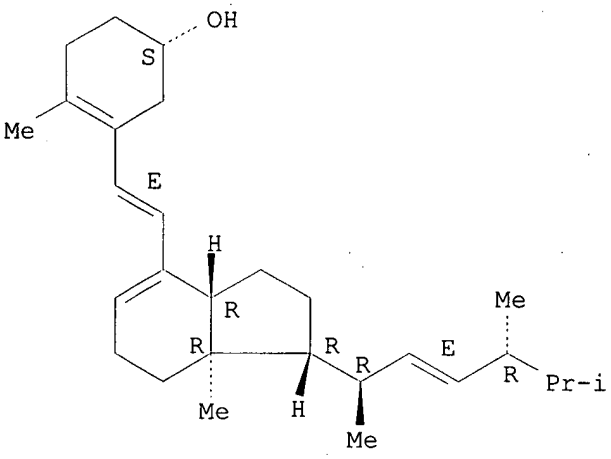
RN 67-97-0 HCAPLUS
CN 9,10-Secocholesta-5,7,10(19)-trien-3-ol, (3.beta.,5Z,7E)- (9CI) (CA INDEX NAME)

Absolute stereochemistry.
Double bond geometry as shown.



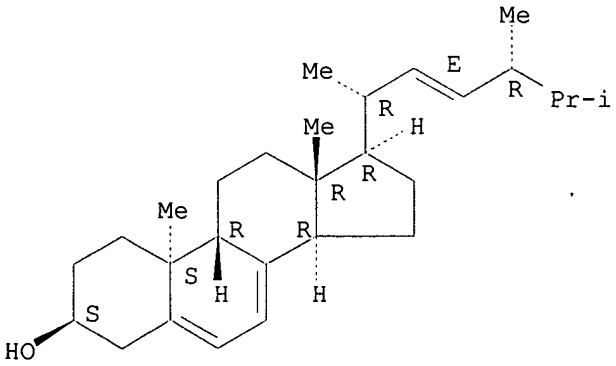
RN 115-61-7 HCAPLUS
CN 9,10-Secoergosta-5(10),6,8,22-tetraen-3-ol, (3.beta.,6E,22E)- (9CI) (CA INDEX NAME)

Absolute stereochemistry.
Double bond geometry as shown.



RN 474-69-1 HCAPLUS
CN Ergosta-5,7,22-trien-3-ol, (3.beta.,9.beta.,10.alpha.,22E)- (9CI) (CA INDEX NAME)

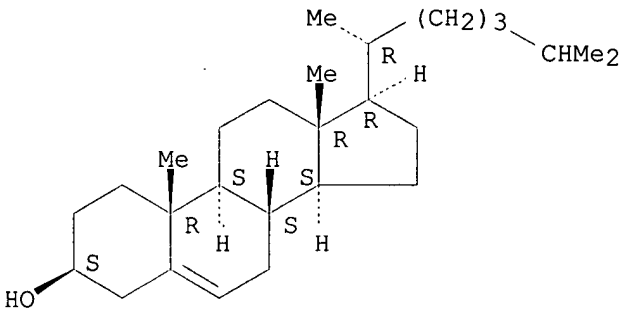
Absolute stereochemistry.
Double bond geometry as shown.



IT **57-88-5**, reactions

RL: RCT (Reactant)
(phosphatidylcholine liposomes contg., **dehydrocholesterol** photolysis in, products of)
RN 57-88-5 HCAPLUS
CN Cholest-5-en-3-ol (3.beta.)- (9CI) (CA INDEX NAME)

Absolute stereochemistry.



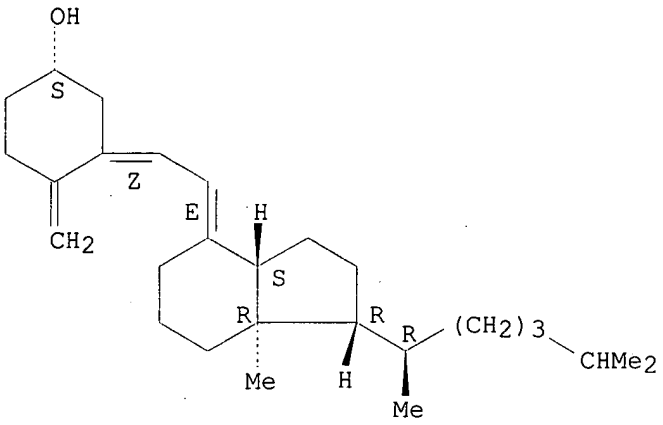
L52 ANSWER 8 OF 11 HCAPLUS COPYRIGHT 2001 ACS
AN 1978:510130 HCAPLUS
DN 89:110130
TI **Chromatographic** separation of **cholecalciferol**
IN Stepanek, Zdenek; Skalicky, Ludek; Valentova, Jindra
PA Czech.
SO Czech., 3 pp.
CODEN: CZXXA9
DT Patent
LA Czech
IC C07C172-00
CC 32-6 (Steroids)
Section cross-reference(s): 17
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI CS 171595	B	19761029	CS 1974-8173	19741129 <--

AB Crude products after irradn. and thermal conversion of 7-**dehydrocholesterol** (I) were fractionated to give pure **cholecalciferol** (II), suitable for human application, and a product useful as feed additive. Thus, crude addn. compd. of I-II **cholesterol** was **chromatographed** on a neutral Al2O3 column in a 1:5 mixt. of CH2Cl2 and ligroin and the eluate gave II. A resinous product, obtained by evapg. the mother liquors after sepn. of the above addn. compd., was passed through the same Al2O3 column in CH2Cl2 and the eluate was evapd. to give a product which exhibited 25 millions I.U. II activity and had sufficiently low toxicity to use a feed additive. The column was eluted with an approx. double amt. of CH2Cl2 to yield the above 3-component addn. compd., contg. 38.5% I, which was recycled.
ST **cholecalciferol** purifn
IT **67-97-0P**
RL: PUR (Purification or recovery); PREP (Preparation)
(purifn. of)
IT **57-88-5P**, preparation
RL: **PREP (Preparation)**
(sepn. of **cholecalciferol** from)
IT 434-16-2
RL: RCT (Reactant)
(sepn. of **cholecalciferol** from)
IT **67-97-0P**
RL: PUR (Purification or recovery); PREP (Preparation)
(purifn. of)
RN 67-97-0 HCAPLUS
CN 9,10-Secocholesta-5,7,10(19)-trien-3-ol, (3.beta.,5Z,7E)- (9CI) (CA INDEX

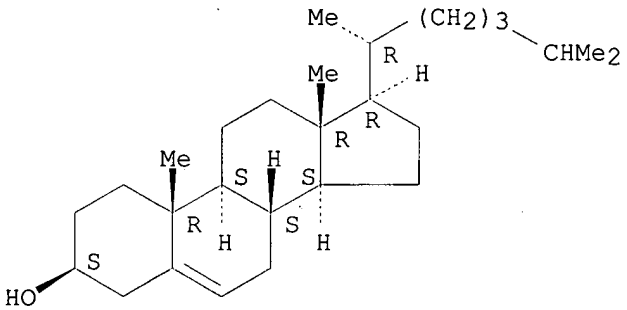
NAME)

Absolute stereochemistry.
Double bond geometry as shown.



IT **57-88-5P**, preparation
RL: **PREP (Preparation)**
(sepn. of **cholecalciferol** from)
RN 57-88-5 HCAPLUS
CN Cholest-5-en-3-ol (3.beta.)- (9CI) (CA INDEX NAME)

Absolute stereochemistry.



L52 ANSWER 9 OF 11 HCAPLUS COPYRIGHT 2001 ACS
AN 1968:503133 HCAPLUS
DN 69:103133
TI Fractionation of 7-**dehydrocholesterol** photoderivatives by thin-layer **chromatography** for their quantitative estimation and **provitamin D3** preparation
AU Mironova, V. N.
CS Inst. Biokhim., Kiev, USSR
SO Prikl. Biokhim. Mikrobiol. (**1968**), 4(4), 437-9
CODEN: PBMIAK
DT Journal
LA Russian
CC 2 (General Biochemistry)
AB An irradiated 0.1% alc. soln. of 7-**dehydrocholesterol** was evapd. in vacuo, kept overnight at -25.degree. to freeze out the residual **dehydrocholesterol**, and filtered. The filtrate was fractionated by thin-layer **chromatog.** on zeolite-gypsum with heptane-iso-PrOH. SbCl5 was the spray reagent. After development, the adsorbent was scraped off and extd. with iso-PrOH. The exts. were measured spectrophotometrically. The spectra showed max. characteristic for each deriv.: **provitamin D3** Rf 0.82, **lumisterol D3** Rf 0.78, **vitamin D3** Rf

0.72, and 7-**dehydrocholesterol** Rf 0.68. The proof that the last spot represented **provitamin D3** was provided by conversion to **vitamin D3** by boiling on a water bath.

ST **dehydrocholesterol** light; light **dehydrocholesterol**; irradn **dehydrocholesterol**; **chromatog dehydrocholesterol**; vitamin D 3 precursors; precursors vitamin D 3

IT **67-97-0P 474-69-1P 1173-13-3P**
RL: MFM (Metabolic formation); BIOL (Biological study); FORM (Formation, nonpreparative); **PREP (Preparation)**
(formation of, in photoirradiation of 7-**dehydrocholesterol**)

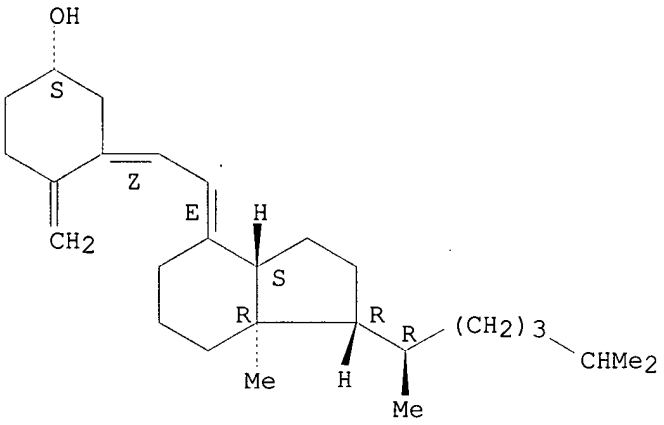
IT 434-16-2
RL: BIOL (Biological study)
(photoirradiation of, **provitamin D3** formation in)

IT **67-97-0P 474-69-1P 1173-13-3P**
RL: MFM (Metabolic formation); BIOL (Biological study); FORM (Formation, nonpreparative); **PREP (Preparation)**
(formation of, in photoirradiation of 7-**dehydrocholesterol**)

RN 67-97-0 HCAPLUS

CN 9,10-Secocholesta-5,7,10(19)-trien-3-ol, (3.beta.,5Z,7E)- (9CI) (CA INDEX NAME)

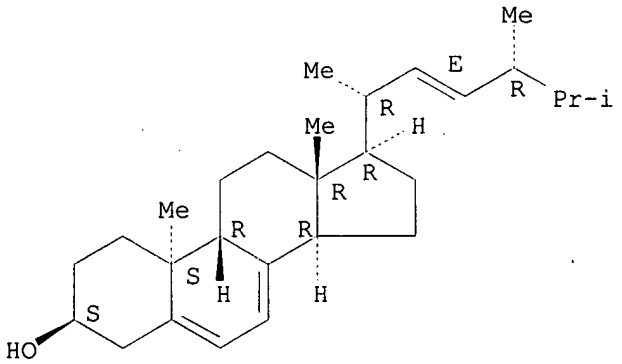
Absolute stereochemistry.
Double bond geometry as shown.



RN 474-69-1 HCAPLUS

CN Ergosta-5,7,22-trien-3-ol, (3.beta.,9.beta.,10.alpha.,22E)- (9CI) (CA INDEX NAME)

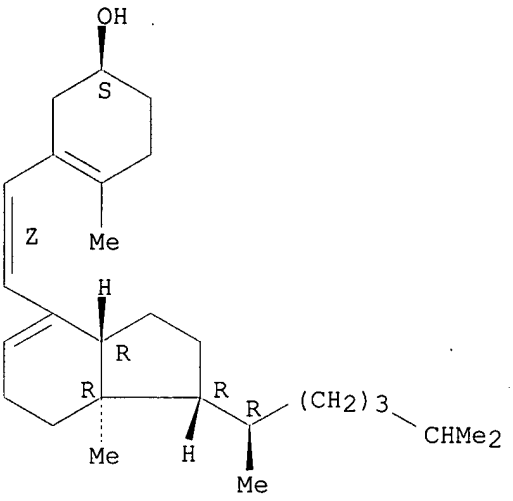
Absolute stereochemistry.
Double bond geometry as shown.



RN 1173-13-3 HCAPLUS

CN 9,10-Secocholesta-5(10),6,8-trien-3-ol, (3.beta.,6Z)- (9CI) (CA INDEX NAME)

Absolute stereochemistry.
Double bond geometry as shown.



L52 ANSWER 10 OF 11 HCAPLUS COPYRIGHT 2001 ACS
AN 1965:44146 HCAPLUS
DN 62:44146
OREF 62:7846a-c
TI 7-**Dehydrocholesteryl** esters, 7-**dehydrocholesterol**, and **vitamin D3**
IN Hercsel, Imre; Ecsery, Zoltan; Laurencsik, Zsuzsa; Sumegi, Jozsef; Komlos, Ferenc
PA Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt.
SO 7 pp.
DT Patent
LA Unavailable
IC C07
CC 42 (Steroids)
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
HU 151690		19641123	HU	19630817 <--

AB A soln. of 7-**bromocholesteryl** benzoate, obtained from 16 g. **cholesteryl** benzoate, in 35 ml. xylene was added dropwise in 10-15 min. to a mixt. of 6.8 g. Et3PO3, 0.3 ml. C5H5N, and 40 ml. xylene at 130.degree. and the mixt. refluxed with stirring 1 hr. to yield 55% 7-**dehydrocholesteryl** benzoate, 81% pure. Similarly, 52.5% 7-**dehydrocholesteryl** acetate (I), m. 129-30.degree., was obtained from 7-**bromocholesteryl** acetate. I (42.7 g.) was added to a heated soln. of 11.2 g. KOH in 400 ml. EtOH under N and the mixt. refluxed with stirring under N for 30 min. to give 34.1 g. 7-**dehydrocholesterol** (II), 98% purity. II (50 g., 98% purity) was dissolved in 17.5 l. EtOH at 50.degree. under **CO2**, and the soln. passed through 3 quartz cells illuminated with Hg vapor lamps at a rate of 13 l./hr. to give 26.5 g. II, 90% pure, and 8.5 g. **vitamin D3** as the 3,5-dinitrobenzoate.

L52 ANSWER 11 OF 11 HCAPLUS COPYRIGHT 2001 ACS
AN 1956:57446 HCAPLUS
DN 50:57446
OREF 50:10848b-f
TI Methods for the determinations of fat-soluble **vitamins** A, D2, **D3**, and E
AU Vendt, V. P.
CS Biochem. Inst., Acad. Sci. Ukr. S.S.R., Kiev

SO Vitaminy, Akad. Nauk Ukr. S.S.R. (**1953**) 7-29
DT Journal
LA Unavailable
CC 11B (Biological Chemistry: Methods and Apparatus)
AB Detns. of fat-sol. **vitamins** A, D2, **D3**, and E are thoroughly discussed and the following methods are considered the most suitable. **Vitamin** A: colorimetric reaction with 1,3-dichloropropan-2-ol (C.A. 41, 2536g) activated by 1-2% HCl added to the reagent; colorimetric, photocolorimetric, and spectrophotometric methods are described. **Vitamin** A as well as carotene can be detd. in the same sample by using wave lengths of 550 and 750 m.mu., resp. **Vitamin** D2 (**calciferol**): interference of other **sterols** is eliminated by digitonin treatment of samples (0.5 ml. 2% aq. suspension of digitonin per 7 ml. of the soln. made up from 25 g. SbCl5 dissolved in 100 ml. dichloroethane), removal of water by addn. of anhyd. MgSO4 or NaSO4 to the mixt., filtration, and color formation with the SbCl5 reagent; the colorimetric or spectrophotometric measurements of the color formed is made (within 5-10 min. after the addn. of the SbCl5 reagent) at 430 and 530 m.mu., and the extinction coeff. of **vitamin** D2 (ED2) is then calcd. by ED2 = 1.23 E430 - 0.62 E530. The measurements of the two wave lengths is essential since by irradiating ergosterol and **chromatographing** (through activated Al2O3) the reaction mixt., 4 substances have been isolated which gave the color reaction with the SbCl5 reagent. However, only one addnl. measurement at 530 m.mu. is required to get the quant. detn. of **vitamin** D2 in the samples. **Vitamin D3** is detd. by a method similar to that of **vitamin** D2. **Vitamin** E: color formation with HNO3 and the photocolorimetric measurement of the color formed at 470 m.mu.. To remove various interfering substances from the exptl. samples contg. **vitamin** E, **chromatography** (Al2O3) is used, thus giving the following steps for the detn.: sampling, sapon. of the sample (butter), extn. of the unsapond. fraction by Et2O, evapn. of Et2O, soln. of the residue in dichloroethane, **chromatographic** filtration of the soln. under a **CO2** stream, evapn. of dichloroethane, soln. of the residue in EtOH, color formation with HNO3, and spectrophotometric detn. of the color formed.

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=> d all abeq tech tot

L78 ANSWER 1 OF 7 WPIX COPYRIGHT 2001 DERWENT INFORMATION LTD
AN 2000-099423 [09] WPIX
DNC C2000-029035
TI Separation of **vitamin D3** or provitamin D3 from mixtures, especially 7-dehydrocholesterol photolysis reaction mixtures.
DC B05 E15

IN JOHANNSEN, M
PA (HOFF) HOFFMANN LA ROCHE & CO AG F; (JOHA-I) JOHANNSEN M
CYC 31
PI EP 969001 A2 20000105 (200009)* DE 7p C07C401-00
R: AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT RO SE SI
JP 2000053640 A 20000222 (200020) 6p C07C401-00
CN 1240209 A 20000105 (200021) C07C401-00
CA 2275557 A1 19991223 (200023) EN C07C401-00
BR 9903274 A 20000516 (200035) C07C401-00
KR 2000006347 A 20000125 (200063) C07C401-00
US 2001001801 A1 20010524 (200130) C07J053-00
ADT EP 969001 A2 EP 1999-111617 19990616; JP 2000053640 A JP 1999-175755 19990622; CN 1240209 A CN 1999-108675 19990622; CA 2275557 A1 CA 1999-2275557 19990618; BR 9903274 A BR 1999-3274 19990622; KR 2000006347 A KR 1999-23466 19990622; US 2001001801 A1 US 1999-335022 19990617
PRAI EP 1998-111490 19980623
IC ICM C07C401-00; C07J053-00
ICS B01D015-08; C07B063-00; C07J009-00
AB EP 969001 A UPAB: 20000218
NOVELTY - Separation of **vitamin D3** or provitamin D3 from mixtures with other components, e.g. dehydrocholesterol, lumisterol and tachysterol, is effected by column **chromatography**.
MECHANISM OF ACTION - None given.
USE - The process is especially useful for recovering **vitamin D3** or provitamin D3 from reaction mixtures obtained by photolysis of 7-dehydrocholesterol.
ADVANTAGE - The process gives high yields of high-purity products without the need to perform a Diels-Alder reaction to remove tachysterol.
Dwg.0/2
FS CPI
FA AB; DCN
MC CPI: B01-D02; B03-G; B11-C08D2; E10-J02A1; **E11-Q01**
TECH UPTX: 20000218
TECHNOLOGY FOCUS - ORGANIC CHEMISTRY - Preferred Process: The mobile phase comprises supercritical or liquid **carbon dioxide** and a modifier (e.g. a lower alkanol) and the stationary phase is an optionally modified **silica gel**, preferably in the form of homogeneously packed spherical particles with a size of 5-25 mm. **Chromatography** is effected at 30-60degreesC and 7-15 MPa.

L78 ANSWER 2 OF 7 WPIX COPYRIGHT 2001 DERWENT INFORMATION LTD
AN 1995-064212 [09] WPIX
DNN N1995-050835 DNC C1995-028699
TI Determn of **vitamin-D3** derivs with high accuracy - by etherifying and determining substd prods with gas chromatographic mass spectrometry..
DC B05 E15 J04 S03
PA (KURE) KUREHA CHEM IND CO LTD
CYC 1
PI JP 06341980 A 19941213 (199509)* 4p G01N030-88
ADT JP 06341980 A JP 1993-58033 19930224
PRAI JP 1993-58033 19930224
IC ICM G01N030-88
ICS G01N030-72; G01N033-82
AB JP 06341980 A UPAB: 19950306
New determn of **vitamin D3** derivs comprises etherifying the derivs and determining the substd prods by gas chromatographic mass spectrometry with a **vitamin D3** deriv substd with 2-4 deuteriums, pref 3 deuteriums, per mol. Pref the deuterated deriv is 24,25-dihydroxy-(6,19,19-2H) **vitamin D3**, more pref 24R,25-dihydroxy-(6,19,19-2H)-**vitamin D3**, or 24,25-dihydroxy-**vitamin D3**, most pref 24R, 25-dihydroxy-**vitamin-D3**.
USE - The method permits accurate determn of the content of vitamin derivs.

Dwg.1/1
FS CPI EPI
FA AB; GI; DCN
MC CPI: B03-G; B05-A04; B11-C08E; B12-K04; E05-R; E10-E04M1; **E11-Q03E** ; J04-B01A; J04-B01C
EPI: S03-E09C1; S03-E14H9

L78 ANSWER 3 OF 7 WPIX COPYRIGHT 2001 DERWENT INFORMATION LTD
AN 1993-351640 [44] WPIX
DNC C1993-156069
TI Isolation of 5,7-diene-contg. steroid(s) - useful as intermediate for synthesis of **vitamin-D3** derivs. by treating with dienophile and treating obtd. Diels-Alder adduct with reducing agent.
DC B01
IN JOHANSSON, J G; TANABE, M; YASUDA, D
PA (STRI) SRI INT
CYC 21
PI WO 9321205 A1 19931028 (199344)* EN 28p C07J071-00
RW: AT BE CH DE DK ES FR GB GR IE IT LU MC NL PT SE
W: CA JP KR
EP 636139 A1 19950201 (199509) EN C07J071-00
R: CH DE ES FR GB IT LI NL
US 5391777 A 19950221 (199513) 12p C07J075-00
JP 07506351 W 19950713 (199536) 12p C07J075-00
EP 636139 B1 19991117 (199953) EN C07J071-00
R: CH DE ES FR GB IT LI NL
DE 69327050 E 19991223 (200006) C07J071-00
ES 2140458 T3 20000301 (200018) C07J071-00
KR 257445 B1 20000801 (200131) C07J071-00
ADT WO 9321205 A1 WO 1993-US3559 19930414; EP 636139 A1 EP 1993-912261 19930414, WO 1993-US3559 19930414; US 5391777 A Cont of US 1992-869574 19920415, US 1993-152259 19931112; JP 07506351 W JP 1993-518613 19930414, WO 1993-US3559 19930414; EP 636139 B1 EP 1993-912261 19930414, WO 1993-US3559 19930414; DE 69327050 E DE 1993-627050 19930414, EP 1993-912261 19930414, WO 1993-US3559 19930414; ES 2140458 T3 EP 1993-912261 19930414; KR 257445 B1 WO 1993-US3559 19930414, KR 1994-703694 19941015
FDT EP 636139 A1 Based on WO 9321205; JP 07506351 W Based on WO 9321205; EP 636139 B1 Based on WO 9321205; DE 69327050 E Based on EP 636139, Based on WO 9321205; ES 2140458 T3 Based on EP 636139
PRAI US 1992-869574 19920415; US 1993-152259 19931112
REP 8.Jnl.Ref; DE 2535308; EP 337305; EP 73; FR 2327790; FR 2384755
IC ICM C07J071-00; C07J075-00
ICS C07J009-00; C12P033-00
ICA C07C401-00
ICI C12P033-00, C12R001:6
AB WO 9321205 A UPAB: 19950927
Isolation of steroids, contg. a 5,7-diene functionality, from a mixt. of sterols, comprises (a) treating the mixt. with a dienophile of formula (V) (X-R+R-Y) to convert the sterol contg. the 5,7-diene functionality to a Diels-Alder adduct; (b) removing the Diels-Alder adduct form the mixt.; and (c) treating the Diels-Alder adduct with a reducing agent to cleave the adduct and regenerate the 5,7-diene sterol. In formulae, both R's are N or C-Q; both Q's are H; or Q+Q is a bond; x, y are COOH, CHO, NO2, CN, COOR1 or COR1; or x + y is CO-Z-CO; R' is lower alkyl; Z is lower alkylene, lower alkenylene, monocyclic arylene (contg. 5-7C atoms and upto 4 ring substits)., S or NR2; R2 is H, lower alkyl, or monocyclic aryl (contg. 5-7C atoms and opt. susbtd. by 1-5 (CH2)nCOOH NO2 halo or lower alkyl); and n is 0-6.

Also claimed are (A) an analogous process comprising step (a) in which the mixt. is trated with (i) a dienophile precursor of formula X-NH-NH-Y, and (ii) an oxidising agent, followed by steps (b) and (c) as above; (B) and cpds. of formula (III): where R3 is H or R'CO; R' is lower alkyl or monocyclic 5-7C aryl; R4, R5, R6 are H, OH or lower alkyl.

Pref. the mixt. of sterols in process A is a mixt. of yeast sterols in process A is a mixt. of yeast sterol metabolites. In processes A and B,

the Diels-Alder adduct is isolated by crystallisation, by pptn.; or **chromatographically**. The oxidising agent is potassium peroxymonosulphate, lead tetra-acetate, iodosobenzene diacetate, N-bromosuccinimide or t-butyl hypochlorite.

USE/ADVANTAGE - (I) is useful e.g. as an intermediate in synthesis of a variety of cpds. related to **vitamin D3** derivs., e.g. cholesta-5,7-diene-3beta, 25-diol and other 25-substd. **vitamin D3** precursors. The processes are useful for isolation and sepn. of (I) and other 5,7-diene steroids from mixts. of sterols. The processes give good yields of pure prod., and are easy to scale upto a mfg. context.
Dwg.0/0
Dwg.0/0

FS CPI
FA AB; GI; DCN
MC CPI: B01-B04
ABEQ US 5391777 A UPAB: 19950404
A method of sepg. a sterol contg. a 5,7-diene functionality of formula (I) (cholesta-5,7,24-triene-2beta-ol), from a mixt. of yeast sterol metabolites comprises (a) treating mixt. with a dienophile of formula X-R=R-Y or precursor of formula X-NH-NH-Y followed by oxidn., to convert (I) to a Diels-Alder adduct, (b) opt. conversion to a modified Diels-Alder adduct, (which may be later oxidised, e.g., with PbAc4), and (c) removing the adduct or modified adduct from the mixt., e.g., by crystallisation, pptn. or **chromatography**. (I) may be regenerated (d) by redn., e.g., with LiAlH4.

The yeast sterol mixt. may contain squalene, lanisterol, 4,4-dimethyl zymosterol, zymosterol, cholesta-7,14-diene-3-ol, and cholesta-5,7-24-triene-3-ol.

In the formula, R = both N or both C-Q; Q = H or together form a 3rd bond; X1 and Y = electron-withdrawing gps. viz. COOH, CHO, NO2, CN, COOR1 or COR1; R1 = 1-6C alkyl, or X+Y form -(CO)-Z-(CO)- bridge; Z = 1-6C alkylene, 5-7C monocyclic arylene with up to 5 ring substits., or NR2; R2 = H, 1-6C alkyl or 5-7C monocyclic aryl; R4-R6 = H, OH or 1-6C alkyl.

Typically cholesta-5,7,24- triene-3-beta-ol is sepd. by treating the mixt. with phthalhydrazide and PbAc4 and sepd. on **silica gel** column.

USE - Intermediates to **vitamin D3** derivs. obtd. from yeast fermentation prods. which include (I).
Dwg.0/0

L78 ANSWER 4 OF 7 WPIX COPYRIGHT 2001 DERWENT INFORMATION LTD
AN 1993-351639 [44] WPIX
DNC C1993-156068
TI Cholestadiene diol cpds. prepn. useful as **vitamin-D3** analogues - and new epoxy derivs. of diels-Alder adduct of cholestadiene cpd. and triazolidine di one or phthalazine di one.
DC B01
IN JOHANSSON, J G; TANABE, M; YASUDA, D
PA (STRI) SRI INT
CYC 19
PI WO 9321204 A1 19931028 (199344)* EN 32p C07J071-00
RW: AT BE CH DE DK ES FR GB GR IE IT LU MC NL PT SE
W: CA JP KR
ADT WO 9321204 A1 WO 1993-US3556 19930414
PRAI US 1992-869328 19920415
REP 5.Jnl.Ref
IC ICM C07J071-00
ICS C07J009-00
ICA C07C401-00
AB WO 9321204 A UPAB: 19931213
Prepn. of 5,7-diene-contg. steroids in isolated, purified form comprises: (a) reacting a Diels-Alder adduct of formula (II) with an oxidising agent to convert the C-24 olefin to a 24,25-oxide moiety; and (b) treating the prod. with a reducing agent which (i) reduces the 24,25-oxide moiety to a 25-hydroxyl gp., (ii) cleaves the adduct to give the corresp. 5,7-diene, and (iii), where R3 is not H, converts the C-3-OR3 moiety to a C-3

hydroxyl gp.. R-R = N-N, CH-CH or C=C; x,y = COOH, CHO, NO2, CN, COOR1 or COR1; or x + y = CO-Z-CO; Z = lower alkylene, lower alkylene, monocyclic arylene (contg. 5-7C and having upto 4 ring substits.), S or NR2; R' = lower alkyl; R2 = H, lower alkyl, or monocyclic aryl (contg. 5-7C and opt. substd. by 1-5 (**CO2**)nNH2, CH2COOH, NO2, halo or lower alkyl); n = 0-6; R3 = H or R'CO; R' = lower alkyl or monocyclic aryl (contg. 5-7C); R4, R5, R6 = H, OH or lower alkyl.

Also claimed are cpds. of formula (II).

USE/ADVANTAGE - The process is useful for prepn. of cholesta-5,7-diene-36eta, 25-diol, and analogues of this cpd., which are provitamin-D3 metabolites. These can be used in compsns. for treatment of skin diseases, in oral vitamin compsns., and as livestock feed additives. Dwg.0/0

FS CPI
FA AB; GI; DCN
MC CPI: B01-D02; B03-G; B12-A07; B12-J01; B12-L09

L78 ANSWER 5 OF 7 WPIX COPYRIGHT 2001 DERWENT INFORMATION LTD
AN 1993-104288 [13] WPIX
DNC C1993-046213
TI Sepg. 24-position epimer of 24-hydroxy cholesterol deriv. - using liq. **chromatography** column filled with **silica gel** packing obtd. from alkyl (aryl) silicon cpd..
DC B01 E15
PA (TEIJ) TEIJIN LTD
CYC 1
PI JP 05043591 A 19930223 (199313)* 7p C07J009-00
JP 2986592 B2 19991206 (200003) 7p C07J009-00
ADT JP 05043591 A JP 1991-246480 19910902; JP 2986592 B2 JP 1991-246480 19910902
FDT JP 2986592 B2 Previous Publ. JP 05043591
PRAI JP 1990-235797 19900907
IC ICM C07J009-00
ICS B01D015-08; C07J075-00
AB JP 05043591 A UPAB: 19930924
Method comprises sepg. the 24-position epimer of a 24-hydroxycholesterol deriv. form a mixt. of the epimers by liquid **chromatography** using column filled with a packing material consisting of **silica gel** botd. by reaction of silicon compound of the general formula. R1-Si(R2)(R3)(R4) (I), where R1 is a 1-22C aliphatic group and/or lower alkoxy or lower alkyl, with at least one of R2 to R4 being halogen atom or lower alkoxy.

The packing material is produced by reacting known **silica gel** in spherical or crushed form with (I) and has a particle size of 3 to 300 microns and also -1.0 to 0.2 of kp value in the elution soln. having a composition of acetonitrile/water = 30/70: kp = ((retention time of pyridine) - (retention time of phenol))/(retention time of pyridine). The Kp is determined by **HPLC**.

USE/ADVANTAGE - The 24-hydroxycholesterol e.g. 1 alpha, 24-dihydroxycholesterol, is useful as a starting material for the production of 25-hydroxy cholecalciferol and other calciferol derivs. which are active metabolites of **vitamin D3**. The method permits the sepn. of the desired epimer of 24-hydroxycholesterol, without protecting the hydroxy group, and is industrially advantageous. 0/0

FS CPI
FA AB; DCN
MC CPI: B01-D02; E01; E05-E01; E05-E02; **E11-Q03E**

L78 ANSWER 6 OF 7 WPIX COPYRIGHT 2001 DERWENT INFORMATION LTD
AN 1991-200620 [27] WPIX
DNC C1991-086839
TI Removing sterol(s) for lipid(s), esp. cholesterol from food fats - by dissolving sterol and lipid mixt. in high pressure fluid and contacting with adsorbent for sterol.
DC B01 D13 D23 E15

IN CATCHPOLE, O J; HAMILTON, B H; MCLACHLAN, C N S
PA (MCLA-I) MCLACHLAN C N S
CYC 3
PI US 5024846 A 19910618 (199127)*
NZ 221586 A 19930225 (199312) A23C015-00
CA 1320948 C 19930803 (199337) C07J009-00
ADT US 5024846 A US 1990-561477 19900802; NZ 221586 A NZ 1987-221586 19870826;
CA 1320948 C CA 1988-564495 19880419
PRAI NZ 1987-221586 19870826
IC A23C015-16; A23D007-02; C11B003-06; C11B003-10; C11B007-00
ICM C07J009-00
ICS A23C015-12; A23C015-16; A23D007-02; C11B003-06; C11B003-10;
C11B007-00
AB US 5024846 A UPAB: 19930928
Method of sepg. sterols from lipids includes: (a) dissolving a sterol/lipid mixt. in a high pressure physiologically acceptable fluid from a high pressure liq., a high pressure subcritical gas or a high pressure supercritical gas, to form a high pressure fluid mixt.; (b) contacting this mixt. with an adsorbent material comprising oxygen-contg. salts of the basic metals to adsorb the sterols selectively; and (c) removing the sterol-free lipids from the high pressure fluid.
USE/ADVANTAGE - Esp. useful for removing cholesterol from animal/plant oils, meat, cheese, milk fats, egg powder and esp. butter. Extraction conditions are such that organoleptic properties of the food prod. are not effected. The adsorbents are relatively inexpensive and can be regenerated, and the high pressure fluid may be recycled. Process could also be applied to concentrate e.g. hormones, steroids, vitamin D.
0/2
FS CPI
FA AB; DCN
MC CPI: B01-D02; B03-G; B04-B02D; D03-B; D03-C; D03-H01T; E01;
E11-Q01; E31-K05B; E31-K05C; E34; E35

L78 ANSWER 7 OF 7 WPIX COPYRIGHT 2001 DERWENT INFORMATION LTD
AN 1983-781678 [40] WPIX
DNC C1983-096651
TI Sepn. of crystalline **vitamin-D3** from sterol adducts - involves sepn. of **chromatography** on activated nitrogen-contg. charcoal, to increase yield and quality.
DC B01 B05 E15
IN TERSTEPAN, A M; VASILEVSKA, V N; YAKHIMOVIC, R I
PA (AUBI-R) AS UKR BIOCHEM INST; (AUGE) AS UKR GEN INORG CHEM
CYC 1
PI SU 979335 A 19821207 (198340)* 3p
PRAI SU 1981-3317764 19810709
IC A61K031-56; C07C172-00
AB SU 979335 A UPAB: 19930925
Sepn. of crystalline **vitamin D3** (e.g. valuable antirachitic prepn.) from its adducts with sterol increases yield and quality by carrying out the **chromatographic** sepn. on activated N-contg. charcoal with sorptive pore vol. 1.09-1.25 cc/g (by benzene); eluting **vitamin D3** with a mixt. of organic solvents with dielectric permittivity 4.0-5.0. As previously, the sepn. involves sepn. of the adduct by **chromatography**, elution of **vitamin D3** with organic solvent, and crystallisation of the final prod. from aq. acetone.
In an example, 5 g adduct are sepd. on 80 g sorbent mark SKN-112 (sorptive pore vol. 1.12 cc/g) before eluting with 9/1 benzene/acetone mixt. to give 2.4 g colourless resin contg. 98% **vitamin D3**. Crystalline gave 2.16 g **vitamin D3** (yield 84%). Bul.45/7.12.82.
0/0
FS CPI
FA AB
MC CPI: B03-G; B11-B; E03; E10-E04F

=> fil japio
FILE 'JAPIO' ENTERED AT 16:01:53 ON 12 SEP 2001

FILE LAST UPDATED: 03 SEP 2001 <20010903/UP>
FILE COVERS 1976 THROUGH MAY 29, 2001

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L87 ANSWER 1 OF 4 JAPIO COPYRIGHT 2001 JPO
AN 2000-053640 JAPIO
TI PRODUCTION OF **VITAMIN D3** OR **PREVITAMIN D3**
IN JOHANNSEN MONIKA
PA F HOFFMANN LA ROCHE AG
PI JP 2000053640 A 20000222 Heisei
AI JP1999-175755 (JP11175755 Heisei) 19990622
PRAI EP 1998-111490 19980623
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 2000
IC ICM C07C401-00
ICS C07B063-00
AB PROBLEM TO BE SOLVED: To obtain the subject compound in high yield by with column **chromatography** from a mixture of dehydrocholesterol and/or lumisterol and/or tachysterol and other component(s).
SOLUTION: The subject compound is obtained according to the following procedure: a mother liquor consisting of a mixture of dehydrocholesterol and/or lumisterol and/or tachysterol and other component(s) is first subjected to thermal isomerization followed by column **chromatography** using, as a mobile phase, supercritical or liquid **carbon dioxide** pref. spiked with a polar modifier, with modified **silica gel** as a stationary phase as desired, to effect removing the remaining 7-dehydrocholesterol and tachysterol, and the resulting effluent is recycled to an irradiation batch; the objective **vitamin D3** can be crystallized from the useful fraction thus afforded and the **vitamin D3**, the other objective **previtamin D3** and lumisterol left in the resultant solution are similarly recycled to the irradiation batch.
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L87 ANSWER 2 OF 4 JAPIO COPYRIGHT 2001 JPO
AN 1996-225480 JAPIO
TI PRODUCTION OF SYNTHETIC INTERMEDIATE FOR VITAMIN D DERIVATIVE
IN DAN AKITO; IKEDA MASAHIKO; BARII EMU TOROSUTO
PA SUMITOMO PHARMACEUT CO LTD, JP (CO 487249)
PI JP 08225480 A 19960903 Heisei
AI JP1995-108171 (JP07108171 Heisei) 19950406
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 96, No. 9
IC ICM (6) C07C043-178
ICS (6) C07C029-143; (6) C07C029-44; (6) C07C033-042; (6) C07C033-048; (6) C07C041-18; (6) C07F007-18
ICA (6) C07C401-00
AB PURPOSE: To obtain an ene-yne compound useful as a synthetic intermediate of an active form of a **vitamin D3** derivative in an effective manner by reacting an optically active alcohol derivative with an ethylene metal salt and subsequently reducing the obtained reaction product.
CONSTITUTION: An enone compound of formula II is obtained by reacting a compound of formula I (R is H or a blocking group for OH; Y is H or a substituted silyl) with a metal salt of ethylene (e.g. halogenated vinylmagnesium) in a solvent (e.g. THF) at 0-50.degree.C. Subsequently, after blocking or deblocking is optionally carried out for a hydroxy group, the compound of formula II is reduced in a diastereo-selectively by a general method to obtain an ene-yne compound of formula III. Use of a

compound of formula III as a raw material enables the easy synthesis of 23-hydroxy(or oxo)**vitamin D3** derivative useful as a curing or prophylactic agent to diseases such as osteoporosis and rachitis, which are attributable to abnormalities of absorption, transportation or metabolism of calcium, an anti-tumor agent, etc., without depending on time consuming processes and through such a moderate process as **silica gel** column **chromatography** for purification.

L87 ANSWER 3 OF 4 JAPIO COPYRIGHT 2001 JPO
AN 1987-298572 JAPIO
TI PURIFICATION OF 1ALPHA-HYDROXYVITAMIN D3
IN MATSUURA FUMIAKI; KATO MASAHIRO; SHIMIZU HIROHITO; MICHISHITA TADAO
PA CHUGAI PHARMACEUT CO LTD, JP (CO 000331)
PI JP 62298572 A 19871225 Showa
AI JP1986-143686 (JP61143686 Showa) 19860619
SO PATENT ABSTRACTS OF JAPAN, Unexamined Applications, Section: C, Sect. No. 502, Vol. 12, No. 198, P. 44 (19880608)
IC ICM (4) C07C172-00
AB PURPOSE: To easily improve the yield of the titled compound useful as a remedy for dysbolism of vitamin D, by using a specific **chromatographic** process in the separation of the titled compound from a mixture of silyl ether of 1.alpha.- hydroxyvitamin D3, silyl ether of 1.beta.-hydroxyvitamin D3, etc.
CONSTITUTION: The objective compound can be produced by the **chromatographic** treatment of a mixture of silyl ether of 1.alpha.-hydroxyvitamin D3, silyl ether of 1.beta.-hydroxyvitamin D3 and/or silyl ether of 1.alpha.-hydroxy-5,6- trans-**vitamin D3** of formula I, II or III (R1 and R2 are same or different group of formula IV (R3, R4 and R5 are same or different lower alkyl or aryl)) using **chromatographic** carrier composed mainly of a **silica gel**. The silylation of a mixture of 1.alpha.-hydroxyvitamin D3, etc., is carried out e.g. by reacting the mixture with a silylation agent in an inert solvent in the presence of a base.

L87 ANSWER 4 OF 4 JAPIO COPYRIGHT 2001 JPO
AN 1986-197573 JAPIO
TI 5,6-EPOXIDIZED TRANS-**VITAMIN D3**
IN TAKAYAMA HIROAKI; YAMADA SACHIKO; YAMAMOTO KEIKO
PA CHUGAI PHARMACEUT CO LTD, JP (CO 000331)
PI JP 61197573 A 19860901 Showa
AI JP1985-35312 (JP60035312 Showa) 19850226
SO PATENT ABSTRACTS OF JAPAN, Unexamined Applications, Section: C, Sect. No. 399, Vol. 11, No. 24, P. 96 (19870123)
IC ICM (4) C07D303-14
ICA (4) A61K031-335; (4) A61K031-59; (4) C07C172-00
AB NEW MATERIAL: The 5,6-epoxy-5,6-trans-**vitamin D3** of formula.
USE: It has vitamin D-like activity.
PREPARATION: The compound of formula can be produced e.g. by reacting 5,6-trans-**vitamin D3** with m-chloroperbenzoic acid in an inert solvent. The 7,8- epoxide in the reaction mixture can be separated easily by the column **chromatography** using a **silica gel**.

=> fil uspat
FILE 'USPATFULL' ENTERED AT 16:08:06 ON 12 SEP 2001
CA INDEXING COPYRIGHT (C) 2001 AMERICAN CHEMICAL SOCIETY (ACS)

FILE COVERS 1971 TO PATENT PUBLICATION DATE: 11 Sep 2001 (20010911/PD)
FILE LAST UPDATED: 11 Sep 2001 (20010911/ED)
HIGHEST GRANTED PATENT NUMBER: US6289514
HIGHEST APPLICATION PUBLICATION NUMBER: US2001016957
CA INDEXING IS CURRENT THROUGH 11 Sep 2001 (20010911/UPCA)

ISSUE CLASS FIELDS (/INCL) CURRENT THROUGH: 11 Sep 2001 (20010911/PD)
REVISED CLASS FIELDS (/NCL) LAST RELOADED: Jun 2001
USPTO MANUAL OF CLASSIFICATIONS THESAURUS ISSUE DATE: Jun 2001

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>>> is included in file records. A thesaurus is available for the <<<
>>> USPTO Manual of Classifications in the /NCL, /INCL, and /RPCL <<<
>>> fields. This thesaurus includes catchword terms from the <<<
>>> USPTO/MOC subject headings and subheadings. Thesauri are also <<<
>>> available for the WIPO International Patent Classification <<<
>>> (IPC) Manuals, editions 1-6, in the /IC1, /IC2, /IC3, /IC4, <<<
>>> /IC5, and /IC (/IC6) fields, respectively. The thesauri in <<<
>>> the /IC5 and /IC fields include the corresponding catchword <<<
>>> terms from the IPC subject headings and subheadings. <<<

This file contains CAS Registry Numbers for easy and accurate
substance identification.

=> d bib abs hitrn l95

L95 ANSWER 1 OF 1 USPATFULL
AN 2001:89661 USPATFULL
TI PROCESS FOR PRODUCING **VITAMIN D3** AND
PREVITAMIN D3
IN JOHANNSEN, MONIKA, HAMBURG, Germany, Federal Republic of
PI US 2001001801 A1 20010524
AI US 1999-335022 A1 19990617 (9)
PRAI EP 1998-111490 19980623
DT Utility
FS APPLICATION
LREP MARK E WADDELL ESQ, BRYAN CAVE LLP, 245 PARK AVENUE, NEW YORK, NY,
101670034
CLMN Number of Claims: 6
ECL Exemplary Claim: 1
DRWN 2 Drawing Page(s)
LN.CNT 275
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB A process for the production of vitamin D.sub.3 or previtamin D.sub.3
from an isomer mixture comprises carrying out a separation by column
chromatography using supercritical or liquid **carbon
dioxide**, optionally with a modifier, as the mobile phase and an
optionally modified silica gel as the stationary phase.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.
IT **124-38-9**, Carbon dioxide, uses
(prepn. of vitamin D3 and provitamin D3 via sepn. from a mixt. via
column chromatog. with supercrit. or liq. carbon dioxide)
IT **67-97-0P**, Vitamin D3 **1173-13-3P**, Previtamin D3
(prepn. of vitamin D3 and provitamin D3 via sepn. from a mixt. via
column chromatog. with supercrit. or liq. carbon dioxide)

=> d his

(FILE 'HOME' ENTERED AT 14:39:49 ON 12 SEP 2001)
SET COST OFF

FILE 'REGISTRY' ENTERED AT 14:40:06 ON 12 SEP 2001
L1 2 S (VITAMIN D3 OR PREVITAMIN D3)/CN
L2 106 S C27H44O/MF AND C6/ES AND C5-C6/ES
L3 67 S L2 NOT (LABELED OR ION OR (D OR T)/ELS OR 11C# OR 13C# OR 14C

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L4          41 S L3 NOT 3 OL
L5          26 S L3 NOT L4
L6          24 S L5 NOT 46.150.18/RID
L7           5 S L6 NOT (19 OR 6 8)
L8          19 S L6 NOT L7
L9          15 S L8 NOT (13 OR 5 8)
L10         12 S L9 NOT 14

     FILE 'HCAPLUS' ENTERED AT 14:46:42 ON 12 SEP 2001
L11       4425 S L10
L12      10946 S (VITAMIN OR PREVITAMIN OR PRE VITAMIN)(L)D3
L13       8231 S (VITAMIN OR PREVITAMIN OR PRE VITAMIN)()D3
L14       9071 S L11,L13
L15       2573 S L12 NOT L14
               E JOHANNSEN M/AU
L16         13 S E3,E8
L17          2 S L14 AND L16
L18          0 S L15 AND L16

     FILE 'REGISTRY' ENTERED AT 14:55:02 ON 12 SEP 2001
L19          4 S (TACHYSTEROL OR DIHYDROCHOLESTEROL OR LUMISTEROL OR CHOLESTER
L20          1 S CARBON DIOXIDE/CN

     FILE 'HCAPLUS' ENTERED AT 14:55:37 ON 12 SEP 2001
L21         28 S L14 AND (L20 OR CARBON DIOXIDE OR CO2)
L22        645 S L14 AND (L19 OR TACHYSTEROL OR DIHYDROCHOLESTEROL OR LUMISTER
L23          5 S L21 AND L22
               E CHOROMATOG/CW
               E CHROMATOG/CW
L24        160 S E3-E7 AND L14
               E CHROMATOGRAPH/CT
               E E65+ALL
L25        194 S L14 AND E4,E3+NT
               E E254+ALL
L26          8 S L14 AND E4,E3+NT
L27         11 S L14 AND E34+NT
L28        937 S L14 AND ?CHROMATOG?
L29          7 S L24-L28 AND L21
L30        100 S L14 AND SILICA(L)GEL
L31          1 S L30 AND L21
L32          7 S L17,L29,L31
L33          3 S L23 AND L32
L34        584 S L14 AND ?CHOLESTEROL?
L35        602 S L14 AND ?CHOLESTER?
L36          6 S L22,L34,L35 AND L21
L37        157 S L22,L34,L35 AND L24-L28
L38         19 S L37 AND L30
L39          1 S L38 AND L36
L40         10 S L23,L29,L31,L32,L33,L36,L39
L41          1 S L38 AND L40
L42         10 S L40,L41
L43       1169 S L19 (L) (PUR/RL OR PREP/RL)
L44          1 S L43 AND L21
L45         25 S L43 AND L22,L34,L35
L46          3 S L43 AND L24-L28
L47          2 S L43 AND L30
L48         15 S L42,L44,L46,L47
L49          6 S L45 AND L48
L50         15 S L48,L49
L51         12 S L50 AND (PD<=19990617 OR PRD<=19990617 OR AD<=19990617 OR PY<
L52         11 S L51 AND (?VITAMIN?(L)D3 OR ?CALCIFER?)
               SEL HIT RN

     FILE 'REGISTRY' ENTERED AT 15:46:29 ON 12 SEP 2001
L53          6 S E1-E6
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     FILE 'REGISTRY' ENTERED AT 15:46:51 ON 12 SEP 2001

     FILE 'HCAPLUS' ENTERED AT 15:47:04 ON 12 SEP 2001

     FILE 'WPIX' ENTERED AT 15:47:53 ON 12 SEP 2001
L54          813 S L13
                 E VITAMIN D3/DCN
                 E E3+ALL
L55          657 S E2 OR 0276/DRN
                 E PREVITAMIN D3/DCN
                 E E3+ALL
L56            6 S E2
L57         1332 S L54-L56
L58            9 S L57 AND (CO2 OR CARBON()(DIOXIDE OR DI OXIDE))
                 E CARBON DEIOXIDE/DCN
                 E CARBON DIOXIDE/DCN
                 E E3+ALL
L59            2 S L57 AND (E2 OR 1066/DRN)
L60           11 S L58,L59
L61           63 S L57 AND ?CHROMATOG?
L62            9 S L57 AND HPLC
L63            1 S L60 AND L61,L62
                 E R17815+ALL/DCN
L64            8 S N164/M0,M1,M2,M3,M4,M5,M6 AND L57
L65            6 S L64 NOT (CLONING OR NEOPLA?)/TI
L66            1 S L60 AND L65
L67            4 S L61,L62 AND L65
L68           14 S L60,L63,L66,L67
L69            5 S L68 NOT (LAMINATE OR DRINK OR COSMETIC OR ANTITUMOUR OR INDUC
                 E E10=J02A1+ALL/MC
                 E E10-J02A1+ALL/MC
                 E E11-Q01+ALL/MC
L70            5 S E2+NT/MC AND L57
L71            4 S L70 NOT PLASMA/TI
L72            7 S L69,L71
L73            9 S L60 NOT L72
L74           23 S L57 AND SILICA GEL
L75            1 S L74 AND L60
L76           19 S L74 AND L61,L62
L77            3 S L75,L76 AND L72
L78            7 S L72,L77

     FILE 'WPIX' ENTERED AT 15:59:16 ON 12 SEP 2001

     FILE 'JAPIO' ENTERED AT 15:59:46 ON 12 SEP 2001
L79          303 S L13
L80            1 S L79 AND (CO2 OR CARBON()(DIOXIDE OR DI OXIDE))
L81           17 S L79 AND CHROMATOG?
L82            0 S L79 AND HPLC
L83            6 S L79 AND SILICA(L)GEL
L84            1 S L83 AND L80
L85            6 S L83 AND L81
L86            6 S L80,L84,L85
L87            4 S L86 NOT (SIALY? OR ENZYM?)/TI

     FILE 'JAPIO' ENTERED AT 16:01:53 ON 12 SEP 2001

     FILE 'USPATFULL' ENTERED AT 16:02:25 ON 12 SEP 2001
L88          579 S L11 OR L13
L89           64 S L88 AND (L20 OR CO2 OR CARBON()(DIOXIDE OR DI OXIDE))
L90           36 S L89 AND (?CHROMATOG? OR HPLC)
L91            0 S L89 AND CHROMATOG?/CT
                 E COLUMN CHROMATOG/CT
                 E CHROMATOG/CT
L92            1 S L88 AND E6-E20
L93           36 S L90,L92 AND L89
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L94             5 S L10/P AND L93
L95             1 S L94 NOT FLUOR?/TI
L96             1 S L93 AND C07J053/IC,ICM,ICS
L97             5 S L93 AND 552/NCLM,NCLS
L98             5 S L90,L91 AND L94
L99             0 S L97 NOT L94,L98

     FILE 'USPATFULL' ENTERED AT 16:08:06 ON 12 SEP 2001
               SET COST ON
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